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ABSTRACT

This report contains six papers prepared for the California State Postsecondary Education Commission as part of the Commission's long-range planning responsibilities during 89-90 and as background for the Commission's January 1990 report, "Higher Education at the Crossroads. Planning for the Twenty-First Century." The first paper explains the Commission's role in long-range planning for education beyond high school in California and then reviews how enrollment and capital outlay planning is currently conducted. The second paper describes how California's three public segments of higher education and the Commission have estimated the cost of building new campuses. The third paper explains how the Commission has calculated annual per-student costs of operating California's public colleges and universities. The fourth paper reviews national and State evidence about the financial and educational impact of year-round operation through State-supported summer-quarter programs. The fifth paper reports on the capacity of member institutions of the Association of Independent California Colleges and Universities to enroll more California students and the cost implications for the State of encouraging this enrollment. The last paper describes examples in several states of two-year and four-year colleges and universities sharing sites and facilities. Papers are usually referenced and contain supplementary materials where appropriate. (GLR)

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Summary

These six papers were prepared by staff members of the California Postsecondary Education Commission as part of the Commission's long-range planning responsibilities during 1989-90 and as background for the Commission's January 1990 report, *Higher Education at the Crossroads Planning for the Twenty-First Century*.

The first paper, "Planning Our Future," explains the Commission's role in long-range planning for education beyond the high school in California and then reviews how enrollment and capital outlay planning is currently conducted by California's three public segments of higher education and affected by the executive and legislative branches of government. For more information about it, please contact Kirk L. Knutsen of the Commission staff at (916) 322-8013.

The second paper, "Cost Estimates and Simulations for Capital Outlay Planning," describes how California's public segments of higher education and the Commission have estimated the cost of building new campuses. For information about it, contact Kirk L. Knutsen or Wanda N. Yanez at 322-8013.

"Cost Estimates and Simulations for Operating Budgets" -- the third paper -- explains how the Commission has calculated annual per-student costs of operating California's public colleges and universities. For more information, contact Kevin G. Woolfork at 322-8007.

"Issues Related to Year-Round College and University Operation" reviews national and State evidence about the financial and educational impact of year-round operation through State-supported summer-quarter programs. For information: Jane Wellman at 322-8017.

"The Role of Accredited Independent Institutions in Meeting California's Future Enrollment Demand" reports on the capacity of member institutions of the Association of Independent California Colleges and Universities to enroll more California students, and the cost implications for the State of encouraging this enrollment. For information: Karl M. Engelbach at 322-7331.

"Joint or Shared Use of Facilities in Higher Education in Selected States" describes examples in several states of two-year and four-year colleges and universities sharing sites and facilities. For information: Dorothy M. Knoell at 322-8015.

Additional copies of this document may be obtained from the Publications Office of the Commission at (916) 324-4991 or by writing the Commission, Third Floor, 1020 Twelfth Street, Sacramento, California 95814-3985.

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Technical Background Papers to *Higher Education at the Crossroads: Planning for the Twenty-First Century*

Six Commission Staff Reports
Prepared for the Commission's
1989-90 Long-Range Planning Project

POSTSECONDARY
CALIFORNIA EDUCATION
☐ COMMISSION ☐

CALIFORNIA POSTSECONDARY EDUCATION COMMISSION
Third Floor • 1020 Twelfth Street • Sacramento, California 95814-3985

COMMISSION REPORT 90-2
PUBLISHED JANUARY 1990

THIS is one in a series of staff reports on important issues affecting California postsecondary education. These reports are brought to the California Postsecondary Education Commission for discussion rather than for action, and they represent the interpretation of the staff rather than the formal position of the Commission as expressed in its adopted resolutions and reports containing policy recommendations.

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Planning Our Future

A Staff Background Paper on Long-Range Enrollment and Facilities Planning in California Public Higher Education

Introduction

Background to the Commission's involvement in long-range planning

Section 66903 of the California Education Code (Display 1, pp. 2-3) authorizes the California Postsecondary Education Commission to collaborate with the public segments on long-range planning and requires the segments to develop long-range plans that identify the need for and location of new facilities. The Commission also has responsibility for approving sites for new campuses and off-campus centers.

In addition to this statutory authorization for the Commission's involvement in long-range planning, both the Commission for the Review of the Master Plan and the Legislature's Joint Committee for Review of the Master Plan have recently recommended a reinvigorated statewide planning process to be managed by the Postsecondary Education Commission. The Master Plan Review Commission, in its 1987 final report, recommended:

> 24. The California Postsecondary Education Commission shall have the following responsibilities with regard to long-range planning in consultation with the segments: (1) development of a common definition of long-range planning; (2) development of a common set of assumptions upon which such planning is to be based; (3) review of segmental activities to verify that they periodically prepare and update long-range plans based upon the common set of assumptions; and (4) annual preparation of detailed 20-year projections of postsecondary enrollment in the public and private sectors at all levels of instruction, built upon the projections prepared by the Department of Finance (p. 40).

Response of the Commission

In order to more fully examine these issues and define its own role in long-range planning, in September 1987, the Commission formed an Ad Hoc Committee on Long-Range Planning to review the recommendations of the Master Plan Review Commission within the context of the Postsecondary Commission's overall planning priorities. The Ad Hoc Committee presented its final report to the Postsecondary Commission on May 2, 1988, in which it concluded that the urgency of the planning priorities facing the State requires the Commission to assume an active role in long-range planning, although one somewhat different than that suggested by the Master Plan Review Commission. The Ad Hoc Committee viewed this as necessary because it came to the conclusion that uniformity of enrollment projection methodologies and long-range planning approaches, while relevant, is less important than ensuring that the segments' projection methodologies are reasonable, compatible where appropriate, and that their planning capacities are adequate and geared to the particular needs of the segments. The Committee also sensed that a protracted debate about methodology and definitions would not be the most efficient or effective way to lead the process.

The Ad Hoc Committee identified three major roles for the Commission to play in the area of long-range enrollment and facilities planning -- research, coordination, and leadership.

- Its research responsibility centers on the integration of existing information as well as the development of new data, as necessary, relating to long-range enrollment and facilities planning.
- Its coordination responsibility centers on establishing a dialogue between the segments that will allow a careful examination of the cumulative effects of individual segmental plans, in a statewide context.

Note: The Commission originally published this paper in April 1989 as Report 89-15. In this version, the enrollment projections on pages 10-12 have been updated from the comparable statistics in the previous version.

DISPLAY 1 Section 66903, California Education Code

The commission shall have the following functions and responsibilities in its capacity as the statewide postsecondary education planning and coordinating agency and adviser to the Legislature and Governor:

1. It shall require the governing boards of the segments of public postsecondary education to develop and submit to the commission institutional and systemwide long-range plans in a form determined by the commission after consultation with the segments
2. It shall prepare a five-year state plan for postsecondary education which shall integrate the planning efforts of the public segments and other pertinent plans. The commission shall seek to resolve conflicts or inconsistencies among segmental plans in consultation with the segments. If such consultations are unsuccessful the commission shall report the unresolved issues to the Legislature with recommendations for resolution. In developing such plan, the commission shall consider at least the following factors: (a) the need for and location of new facilities, (b) the range and kinds of programs appropriate to each institution or system, (c) the budgetary priorities of the institutions and systems of postsecondary education, (d) the impact of various types and levels of student charges on students and on postsecondary educational programs and institutions, (e) appropriate levels of state-funded student financial aid, (f) access and admission of students to postsecondary education, (g) the educational programs and resources of private postsecondary institutions, and (h) the provisions of this division differentiating the functions of the public systems of higher education.
3. It shall update the state plan annually.
4. It shall participate in appropriate stages of the executive and legislative budget processes as requested by the executive and legislative branches and shall advise the executive and legislative branches as to whether segmental programmatic budgetary requests are compatible with the state plan It is not intended that the commission hold independent budget hearings.
5. It shall advise the Legislature and Governor regarding the need for and location of new institutions and campuses of public higher education.
6. It shall review proposals by the public segments for new programs and make recommendations regarding such proposals to the Legislature and the Governor.
7. It shall, in consultation with the public segments, establish a schedule for segmental review of selected educational programs, evaluate the program review processes of the segments, and report its findings and recommendations to the Governor and the Legislature.
8. It shall serve as a stimulus to the segments and institutions of postsecondary education by projecting and identifying societal and educational needs and encouraging adaptability to change
9. It shall develop and submit plans to the Legislature and the Governor for the funding and administration of a program to encourage innovative educational programs by institutions of postsecondary education.
10. It shall collect or conduct or both collect and conduct studies of projected manpower supply and demand, in cooperation with appropriate state agencies, and disseminate the results of such studies to institutions of postsecondary education and to the public in order to improve the information base upon which student choices are made.
11. It shall periodically review and make recommendations concerning the need for and availability of postsecondary programs for adult and continuing education.

(continued)

DISPLAY 1 (continued)

12. It shall develop criteria for evaluating the effectiveness of all aspects of postsecondary education
13. It shall maintain and update annually an inventory of all off-campus programs and facilities for education, research, and community service operated by public and private institutions of postsecondary education.
14. It shall act as a clearinghouse for postsecondary education information and as a primary source of information for the Legislature, the Governor, and other agencies, and develop a comprehensive data base insuring comparability of data from diverse sources.
15. It shall establish criteria for state support of new and existing programs, in consultation with the public segments, the Department of Finance, and the Joint Legislative Budget Committee.
16. It shall comply with the appropriate provisions of the Education Amendments of 1972 (P.L. 92-318) as specified in Section 67000.
17. It shall consider the relationships between academic and occupational and vocational education programs and shall actively encourage the participation of state and local and public and private persons and agencies with a direct interest in these areas.

- Its coordination responsibility centers on establishing a dialogue between the segments that will allow a careful examination of the cumulative effects of individual segmental plans, in a statewide context.
- Its responsibility of leadership centers on stimulating a focused and productive statewide debate over the major planning and policy issues surrounding long-range enrollment and facilities planning.

It is the Commission's view that in this leadership role, it should seek to support a dynamic and multidimensional planning capacity among the segments. This stems from the presumption that an adequate and effective planning capacity is central to the ability of the segments to perform a variety of other management functions, including the ability to effectively articulate current and future needs.

Adding to the call for the Commission to take a lead role in long-range enrollment and facilities planning, the Legislature enacted Supplemental Budget Language in June 1988 directing the Commission to initiate its long-range planning process by developing recommendations for the Legislature and the Governor on policy variables that will influence the need for and costs of new facilities through the year 2005 (Display 2, pp. 4-5).

Origins of the background paper

As a result of these internal and external calls for an expanded planning role for the Commission, in June 1988 the Commission embarked on a major study of long-range enrollment and facilities planning to:

1. Identify the factors that will influence demand for new postsecondary education facilities over the next 20 years;
2. Identify and analyze those variables which are susceptible to State-level policy control; and
3. Provide the Legislature and the Governor with recommendations on the direction the State should take with respect to the major factors that will shape the need and cost of new facilities through the year 2005.

The Commission authorized staff to proceed with the project based on the staff's "Prospectus for a Study of Long-Range Enrollment and Facilities Planning in California Higher Education" of June 1988 (Appendix A, pages 46-49 below). As a first

DISPLAY 2 Supplemental Budget Language

Item 6420-001-001 (California Postsecondary Education Commission - Support)

In order to ensure that State decisions about new postsecondary facilities are consistent with State policy on access, equity, and choice and take into account total demand and total resource availability, the State hereby directs the California Postsecondary Education Commission, in cooperation with the public and private postsecondary segments and in conjunction with the appropriate State fiscal agencies, to develop recommendations to the Legislature and the Governor on policy variables that will influence State costs for new facilities through the year 2005. For the purpose of this item, new facilities shall be defined as expansion of individual campuses, construction of new campuses, off-campus centers, or other such expansion to accommodate increased enrollments.

The California Postsecondary Education Commission shall, by December 1989, develop recommendations to the Governor and the Legislature on major policy variables that will shape the costs of new facilities. These shall include recommendations on the following:

1. Educational and fiscal policy variables to be used in selecting locations for new facilities, including an analysis of the relative costs of accommodating expansion on facilities at new sites relative to expansion of existing campuses, as well as the costs of expanding access to public postsecondary education
2. Educational and fiscal policy variables influencing need for new facilities by age of student and academic program type, including when traditional campus facilities are academically required, when nontraditional facilities can best meet demands for access and quality, and whether expanded access to instructional computing or other emerging or nontraditional technologies can replace need for on-site instructional facilities;
3. Space and utilization standards for public postsecondary education;
4. Cost savings possible through use of year-round operations; and
5. Priorities for construction of new sites by geographic region of the State.

These criteria shall be developed pursuant to the review by the Commission of enrollment projections for public postsecondary education through the year 2005. The review shall include available enrollment projections from the Department of Finance and those developed by the public segments. The Commission shall convene a facilities planning advisory group, to include representatives from the Department of Finance, the University of California, the California State University, the California Community Colleges, the Association for Independent California Colleges and Universities, the Department of Finance and the Office of the Legislative Analyst, for the purpose of consultation and advice on these recommendations.

Item 6440-001-001 (University of California, Main Support)

The Regents of the University of California are requested to prepare statewide projections of demand for undergraduate and graduate enrollments through the year 2005. These projections shall then become the basis for the development of a statewide plan for accommodating enrollment demand through the year 2005, including plans for expansion of individual campuses and construction of new campuses, off-campus centers, or other such expansion to accommodate increased enrollments. These plans are to be submitted by December 1990 to the State Department of Finance and the Legislative Analyst for comment and review as well as to the California Postsecondary Education Commission for review and comment before being submitted to the Governor and the Legislature.

Item 6610-001-001 (California State University, Main Support Budget)

The Trustees of the California State University are requested to prepare statewide projections of demand

(continued)

DISPLAY 2 (continued)

for undergraduate and graduate enrollments through the year 2005. These projections shall then become the basis for the development of a statewide plan for accommodating enrollment demand through the year 2005, including plans for expansion of individual campuses and construction of new campuses, off-campus centers or other such expansion to accommodate increased enrollments. These plans are to be submitted by December 1990 to the State Department of Finance and the Legislative Analyst for comment and review as well as to the California Postsecondary Education Commission for review and comment before being submitted to the Governor and the Legislature.

Item 6870-001-001 (Community Colleges Board of Governors, Main Support Item)

The Board of Governors is requested to prepare statewide projections of demand for Community College credit and non-credit enrollments through the year 2005. These projections shall then become the basis for the development of a statewide plan for accommodating enrollment demand through the year 2005, including plans for growth at individual districts, as well as construction of new centers, campuses, or other such expansion to accommodate increased enrollments. These plans are to be submitted by December 1990 to the State Department of Finance and the Legislative Analyst for comment and review as well as to the California Postsecondary Education Commission for review and comment before being submitted to the Governor and the Legislature.

step in the project, the staff sought to compile the most accurate and recent information available on the methodologies and processes currently employed by the relevant government and educational entities with respect to enrollment and facilities planning in California postsecondary education.

As the product of that initial background work, this paper aims to establish a common understanding of the framework within which enrollment and facilities planning currently occurs in the public segments of California's postsecondary education system. Specifically, the purposes of this background paper are two:

1. To establish a policy framework within which the Commission will examine and assess the planning processes of the segments; and

2. To describe the processes and identify the major differences among the segments for (1) short-term enrollment planning, as utilized for the annual State budgeting process, (2) long-range enrollment planning, as utilized for State capital outlay and institutional long-range planning purposes, and (3) ongoing capital outlay planning.

A policy context for the Commission's planning priorities

In order to establish a policy context within which the Commission can identify and evaluate the similarities and differences in the planning processes of the segments, the following paragraphs outline the general uses to which institutional planning can and should be put, as well as some of the characteristics of effective short- and long-range planning. This discussion should not be considered prescriptive or definitive, however; in fact, to do so would run contrary to the fluid and responsive approaches necessary for effective planning. Rather, the following discussion should be viewed as a general exposition of the importance of planning to the ability of a segment to set and meet its short- and long-range goals.

Caveats about planning

Certain dangers are inherent in overreliance on the "plans" generated by long-range planning activities. No matter how effective and comprehensive the planning process, the plans it generates will (and should) evolve as time goes on, when better and more recent information is introduced into the process. The essential frame of reference, therefore, is the view that the planning process itself, rather than the plans it generates, is the essential product of good planning. As Dwight D. Eisenhower said: "Plans are nothing. Planning is everything."

While self-evident, one additional factor must be carefully considered when examining and making judgments about segmental planning efforts: The segments differ dramatically with regard to size, clientele, and institutional mission (Appendix B, pp. 49-50 below). These differences in size and mission may appropriately manifest themselves in substantial disparities in the specific planning approaches pursued by the segments.

For example, it may be that the management complexities associated with administering the 70-district, 107-campus Community College system require a somewhat more centralized planning approach than is necessary in the nine-campus University of California system. These differences must be recognized by State level policymakers, and in some cases encouraged.

As noted earlier, uniformity of approach in planning is not nearly so important as ensuring that each segment possesses an adequate planning capacity that is structured to address and articulate the unique needs and goals of that system. As a result of these fundamental differences, the Commission must be careful in its analysis to avoid the trap of making comparisons of planning processes across segmental lines that may not be appropriate or useful.

Commonalities of planning

With these caveats firmly in mind, the Commission still believes that adequate and effective planning capacities are central to the ability of all the segments to perform a wide variety of management functions, including the capacity to effectively articulate current and future needs. For this to occur, and regardless of the specific structure employed to achieve it, planning must take place on several institutional levels, and the information gleaned from planning should be utilized in a variety of ways to support and augment numerous aspects of institutional management.

Starting from this premise, several commonalities become evident when examining successful institutional planning efforts. These similarities are not specific prescriptions on how to plan, but rather represent the general features of a planning process that serve to encourage and reinforce the sort of integrated, multidimensional perspective toward planning mentioned above:

1. *Projection of future trends* In its simplest form, planning is an effective tool for establishing quantitative estimates of a variety of important factors such as future enrollments, future physical plant needs, personnel trends, and the like This sort of institutional research is central to the planning process, not only because of the value of the information it generates, but often because of the iterative process employed to determine which questions should be asked.

The Commission examines this portion of the segments' planning activities to ensure that the segmental projections being conducted are reasonable and, where appropriate, comparable between segments.

2. *Establishment and evaluation of program and institution-wide goals:* The merging of departmental and institutional academic objectives with quantitative trend data allows those involved in planning to establish realistic and attainable goals and objectives. In this dimension of planning, the process of goal-setting operates on a broad conceptual level, distinct from the specific strategies designed to accomplish the goals.

The Commission examines this aspect of the segments' planning processes to ensure that an appropriate linkage exists to integrate major statewide educational goals (e.g., accommodation of eligible applicants, achievement of educational equity goals, maintenance of educational excellence, etc) into the goal setting processes of both individual departments and entire institutions. Conversely, this examination will also review and comment on the extent to which institutional goal-setting recognizes and supports the unique local objectives of individual campuses and departments.

3. *Institutional assessment in relation to goals:* It is difficult, if not impossible to plan for the future if an institution does not know where it is in the present. Planning is therefore an important mechanism not only for assessing future needs and articulating future plans but also for evaluating and defining

where an institution currently stands. Planning can and should be viewed as an important mechanism through which institutions can integrate a systematic assessment of current needs and priorities with State and institutional policy directions for the future.

Similar to Item 2, the Commission examines this aspect of institutional planning in order to determine the extent to which program review and institutional assessment is being informed and guided by the broad educational goals and objectives operating at the systemwide and statewide levels, while at the same time preserving the degree of local autonomy and discretion necessary to ensure that individual programs and campuses are cognizant of, responsive to, and supported in addressing the unique circumstances in which they find themselves.

4. *Assessment and articulation of present and future resource needs:* It is the Commission's view that the most effective planning processes create a vital analytic base on which the program and resource needs of individual departments and entire institutions can be grounded. The justification for present program and resource needs is sounder and more persuasive when placed in a context, not only of what is necessary to provide current levels of service, but also of what is required in the present to ensure that the department or institution is where decisionmakers want them to be at some point in the future. In addition, effective planning allows institutions to provide "advance warning" to decisionmakers about likely future resource requirements, enhancing the credibility of proposals when they are made and hence, increasing the likelihood of their eventual adoption.

In this area, the Commission examines the planning efforts of the segments to determine the extent to which both the short- and long-range resource needs of the segments are integrated and justified as a means of achieving clearly articulated long-range institutional and statewide goals. Accommodating projected enrollments, increasing student retention, achieving educational equity, and improving educational quality are examples of broad institutional goals which can and should be directly incorporated into short- and long-range assessments of the resource needs of the segments.

5. *Strategy setting:* Effective institutional planning often comprises the crucial link between broadly stated academic and other institutional goals and the development of specific strategies needed to achieve them. Strategy setting can also serve as the setting in which departments and institutions plan on how to narrow the gap between program and institutional goals and the resources required to achieve them. In this context, the planning process also serves as the hub around which the different program and administrative components of an institution (faculty, finance, facility planning, etc.) come together to ensure that the translation of goals into strategies occurs in an integrated environment, with all relevant operational and administrative units playing important roles.

The Commission examines this aspect of institutional planning in order to assess the extent to which the development of specific program and institutional strategies is linked to broad program, institutional, and statewide goals of the kind outlined previously. Further, the staff will attempt to assess the extent to which the process of strategy setting involves the wide variety of campus and systemwide constituencies necessary to ensure that a broad-based, institutionwide perspective is brought to bear on this critical phase of the planning process.

6. *Planning as an integrated management tool:* Through integration of planning with ongoing program review and evaluation and the short-term budgetary and management processes of an institution, long-range planning is informed by the latest assessment of the status of the institution, and the evaluative and short-term management processes are informed by a better understanding of the long-range goals of the institution. The integrated planning approach also helps ensure that the planners are aware, as soon as possible, of any deviations in projected enrollment, budgetary, and personnel trends.

This aspect of the Commission's analysis focuses on the level of integration achieved in the segments' individual planning processes, with special emphasis placed on documenting the extent to which statewide planning is informed by the local circumstances of individual departments and campuses, and the extent to which local departmental and institutional planning is informed by broad systemwide and statewide goals of the type outlined above.

7. *State-level influences on institutional planning activities:* While the external influences brought to bear on institutions by the State Legislature, the Governor, and various State agencies are not part of the planning processes of the segments per se, they stand as a stark reminder that institutional planning is not conducted in a vacuum. With this in mind, the Commission's examination of the planning activities of the segments is proceeding alongside of a careful assessment of the statutes, policies, practices, and traditions imposed at the statewide level that may have positive or detrimental effects on the planning processes of the segments.

In this area, the Commission seeks to identify any official or unofficial constraints on segmental behavior, imposed at the statewide level, which serve to compel or encourage institutional activity which is inconsistent with either effective planning or the achievement of broadly accepted educational goals. For example, if some aspect of the State budget process creates disincentives for a segment to conduct long-range fiscal planning, the staff would hope to identify those factors in this portion of its analysis.

Summary

From the Commission's view, it is not essential, and maybe not even possible, for all three segments to undertake planning for all the purposes previously outlined. But as the Commission examines the specific enrollment and facilities planning processes of the segments, it assumes that, especially in an era of growth, the segments should have a roughly equivalent capacity, or at least the choice to have the capacity, to perform integrated planning in a manner similar to that described above. To do any less would be to cheat both the segments and the State's educational policymakers out of important insights into the possible options for California postsecondary education in the twenty-first century.

Population projections

The crucial building block for almost all enrollment projections conducted in California is State population estimates. Since almost all aspects of institutional planning eventually rely to some degree on projections of future enrollments, it is essential that the Commission and segments have a high level of understanding and confidence in the population estimates on which those enrollment projections are based.

California's population projecting unit

Section 13073.5 of the Government Code declares that:

> (1) population size and distribution patterns in California exert a major influence on the physical, social, and economic structure of the state and on the quality of the environment generally; (2) sound and current data and methods to estimate population trends are necessary to enable state, regional, and local agencies to plan and function properly; and (3) there is a critical need for a proper study of the implications of present and future population trends in order that state, regional, and local agencies might develop or reexamine policies and actions based thereon.

The Legislature has charged the Demographic Research Unit within the Department of Finance to fill these needs as the State's single official demographic agency. Under Section 13073 of the Government Code, the Unit is to provide adequate demographic data to aid effective State and local planning and policymaking and to serve all levels of government and the private sector as the centralized source of demographic data. Thus the Unit is named as the primary State government liaison with the U.S. Bureau of the Census in the acquisition and distribution of census data and related documentation to State agencies, in addition to its many other duties.

Appendix C on page 50 describes the methodology employed by the Unit to prepare its statewide population estimates.

Population projections through 2020

The most recent population projections released by the Demographic Research Unit reconfirm that the watchwords for California's changing population are diversity and growth. The State is continuing its already well-documented march toward becoming the first mainland state with no ethnic/racial majority population. Already, Black, Hispanic, and Asian/Pacific children combined comprise the majority of the State's school students from kindergarten through eighth grade. The State is on a threshold of a time (currently projected to occur in the year 2003) when no ethnic subgroup will constitute more than 50 percent of the population -- quite literally a time when there will no longer be any "minority" or "majority" groups.

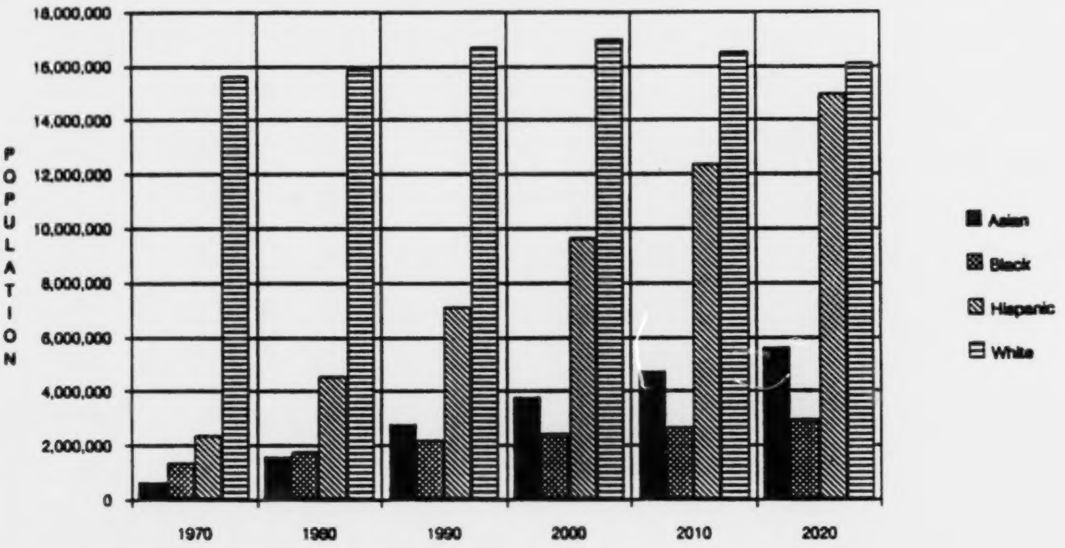
Display 3 below indicates the extent of projected change in the ethnic composition of the population for the 50 years between 1970 and 2020. As indicated by the population projections, long-range planning in California today involves much more than simply anticipating additional numbers of students; it involves planning for a dramatically more diverse and, in many ways, entirely new student clientele.

In terms of total population over the next 20 years, California will continue to grow at a remarkable pace -- more than twice the national rate, to be specific. No other state in the nation will have these challenges and opportunities. Between now and 2005, California's population will grow by almost 25 percent -- representing almost 7 million additional people. This means almost 1,000 additional people per day for the foreseeable future.

This growth will continue beyond 2005; in fact, it appears that in the 40 years between 1980 and 2020, California will grow by roughly as many people as it did during the years 1940 and 1980. Display 4 on page 10 outlines the Unit's statewide population estimates, by ethnicity, through the year 2005.

While planners may have minor disagreements over the amount and type of enrollment growth implied by these changes in California's population, there is no disagreement over the bottom line: In the twenty-first century, more rather than fewer Californians will require advanced educational opportunities. From the population numbers alone, that is a near demographic certainty.

DISPLAY 3 Ethnic Population Change in California, 1970-2020



Source: Demographic Research Unit, State Department of Finance.

DISPLAY 4 Projected Total State Population by Race/Ethnic Group, 1985-2020

Year	Asian/Other	Black	Hispanic	White	Total*
1985	2,228,100	1,984,100	5,844,900	16,308,000	26,365,100
1990	2,799,200	2,157,000	7,099,100	16,715,900	28,771,200
1995	3,324,400	2,301,300	8,368,000	16,962,000	30,955,700
2000	3,805,300	2,424,300	9,664,800	16,958,100	32,852,600
2005	4,255,000	2,545,900	10,985,700	16,759,800	34,546,300
2010	4,713,600	2,683,100	12,343,500	16,537,300	36,277,400
2015	5,176,200	2,824,300	13,672,800	16,331,000	38,004,300
2020	5,615,200	2,962,500	14,948,300	16,092,500	39,618,500

*Sum of race/ethnic groups do not add to Total due to independent rounding.

Source: Demographic Research Unit, State Department of Finance.

Long-range enrollment projections

Background

Enrollment projections in California postsecondary education represent the essential foundations for annual operating and capital outlay budgets, facilities planning, academic planning, personnel recruitment, admissions policies, and nearly every other facet of the management and administration of higher education.

- Projected enrollments, in terms of average daily attendance, weekly student contact hours, full-time equivalents, and headcount are the basic building blocks in the budget formulas that drive the preparation of the annual operating budgets at the segmental, district, and campus levels.
- In the context of long-range planning, enrollment projections represent the single most important factor in determining the need for new facilities, and in some cases, entirely new campuses. Very literally, the expenditure of hundreds of millions of dollars can swing on the accuracy of enrollment projections.

It is essential, therefore, that policymakers recognize the limitations inherent in projecting long-range enrollments, and at the same time do all they can to ensure that these estimates are calculated with extreme care and with professional judgment.

Three entities are currently involved in producing enrollment projections for California's public postsecondary education segments -- (1) the Demographic Research Unit of the State Department of Finance, (2) the University of California, and (3) the California State University. The Chancellor's Office of the California Community Colleges currently does not prepare enrollment projections for that segment and thus it relies exclusively on official estimates from the Demographic Research Unit for capital outlay planning.

The Demographic Research Unit prepares enrollment projections for the University of California and the California State University, but its projections are advisory to these two segments and serve as a check on the projections they prepare and utilize for their own planning purposes. (Appendix D on page 51 presents a detailed description of the Unit's method for projecting their enrollments.)

Recent projections

Based on the projections currently being used by the segments for long-range planning purposes, indications are that enrollments for all of public education will grow through 2005 by approximately 31 percent, with the California Community Colleges and the University of California growing by 30 percent and 44 percent, respectively, and the State University by 54 percent.

Within these totals, the State University projects that its undergraduate population will grow at a substantially faster rate than its graduate enrollment (66 percent to 7 percent), while just the opposite is true for the University of California, which projects that its undergraduate enrollment will grow by 34 percent while its graduate enrollment will increase by 80 percent (Display 5).

It should be noted that the State University's long-range enrollment projections are preliminary estimates generated in the very early stages of its own long-range planning process. The substantial increases in these projections, as compared to previous Demographic Research Unit and State University estimates, can be attributed to the fact that they incorporate optimistic assumptions on progress in providing access to historically underrepresented students. Specifically, the State University's projections assume that by 2005 the participation rates for Black and Hispanic students will equal those of their white counterparts. These projections were prepared by the Office of the Chancellor and precede a request to the campuses to outline the extent to which they can individually accommodate growth through the year 2005. As a result of the preliminary and ongoing nature of the State University's planning process, it is likely that these enrollment projections will undergo revision over time, as a result of refinements in the projection model and discussions with the campuses. So long as policymakers have a clear understanding of where demographic influences stop and where policy objectives begin, this projection approach is entirely consistent with the notion that the segments' planning figures should reflect more than just trend data, but should also incorporate the effects of achieving institutional goals to which the State and the segments are committed. A more detailed description of the methodology employed in these projections can be found in Appendix E on pp. 51-52.

It should also be noted that the University's graduate enrollment estimates are not, and never have been, driven by demographic trends. Rather, they flow from a variety of policy considerations, such as the need to replenish the faculty ranks and the need to maintain an appropriate graduate/undergraduate student balance on campuses.

DISPLAY 5 *Projected Enrollment Growth in California Public Education, 1988-2005*

	1988	2005	Percentage Growth
California Community Colleges Total	1,321,007	1,714,000	30%
California State University Undergraduates	280,800	465,500	66%
California State University Graduate and Postbaccalaureate	70,900	75,800	7%
California State University Total	351,700	541,300	54%
University of California Undergraduates	117,809	158,425	34%
University of California Graduate and Professional	25,851	46,431	80%
University of California Total*	142,070	204,856	44%
K-12 Total	4,509,504	5,979,000	33%
Total Growth in Public Postsecondary Education	1,814,777	2,460,156	36%
Total Growth in Public Education	6,324,281	8,439,156	33%

*Excludes University of California Health Science Enrollments.

Source: Projections for the California Community Colleges and K-12 from the Demographic Research Unit, State Department of Finance. University of California projections from the University, and California State University projections from CSU.

With respect to growth in the public school system, the numbers are just as dramatic. Between 1988 and 2005, that system will likely add more than 1.4 million new students, representing growth of 33 percent. Compared to projected State population growth of 24 percent, it is clear that quality improvement will not be the only issue on the reform agenda for the schools, but that accommodation of substantially higher enrollments will also be a major factor driving their resource needs.

Demographic base

All three producers of enrollment projections utilize either directly or indirectly the baseline population projections prepared by the Demographic Research Unit discussed in Part Three. The Unit itself relies on the most recent population projections for California, stratified by age, sex, and county; the University of California utilizes the Unit's projections of K-12 enrollments (which flow directly from the population projections); and the California State University (for its long-range projections) employs the Unit's projections of statewide population, stratified by age, sex, and county of origin.

The Unit updates its K-12 projections annually, based on the results of the Department of Education's annual census of schools. (Appendix F on pp. 52-53 presents a detailed discussion of the K-12 enrollment projection methodology.)

Enrollment projection methodologies

Display 6 offers a summary comparison of the enrollment projection methodologies of the segments and the Unit. As can be seen, the Demographic Research Unit and the California State University both produce their university-level enrollment projections by applying observed and/or projected participation rates of specific categories of students (age, sex, and county of origin), to projected population estimates in those categories developed by the Unit.

The University of California applies anticipated participation rates of California high school students to estimates of future high school enrollment to project entering freshmen. It then applies anticipated continuation rates to the previous year's enrollment estimates to generate its base demographic projection. In addition, the University's model allows, among other factors, the addition of explicit assumptions concerning ethnic change and latent demand to the base demographic projection. Since the capacity to incorporate different assumptions allows numerous variations on the same basic model, the University has usually presented its enrollment projections as a range of potential enrollment levels.

Community college enrollment estimates for capital outlay purposes are projected by the Unit through use of an age/sex participation rate model that utilizes historical and projected county populations by age and sex, and community college enrollment data by age, sex, and enrollment category. The population base for each community college district is the county or counties in which it is geographically located, minus any population present in military barracks or State institutions and full-time students in local four-year colleges. (Appendix G on page 53-55 contains a more specific description of this methodology.)

The Unit also prepares statewide adult population estimates that are used to calculate annual budget allocations for the community colleges, but neither the Unit nor the community colleges prepare enrollment estimates that can be used for short-term "next year" enrollment planning.

Segmental enrollment planning

California Community Colleges

There is general agreement that the current enrollment planning and annual budgeting mechanism for the California Community Colleges is inadequate and in need of substantial change. In fact, recently enacted reform legislation (Assembly Bill 1725, Vasconcellos) and the voter-approved Proposition 98, have set the stage for the community colleges to undergo dramatic reform in the way their annual needs are calculated for budgeting purposes. While it is too early to comment on the pace and form in which these reforms will proceed, it is likely that the next five years will see a major transition by the community colleges away from the enrollment planning and budgeting process described here.

DISPLAY 6 *Enrollment Projection Methodologies of the Segments and the Department of Finance*

Enrollment Forecasters	Demographic Base	End-Year	Campus Specific	Methodology	Additional Variables
University of California	Demographic Research Unit K-12 Enrollment Projections (From State Department of Education K-12 Census)	2005	Yes	Applies observed and projected enrollment rates to Demographic Research Unit estimates of high school students and their expected continuation rates to last year's enrollment.	Yes (ethnic change, latent demand, and others)
The California State University	Demographic Research Unit Population Estimates (by age, sex, and county of origin)	2005	No	Applies observed and projected enrollment rates for specific categories of students to projected population in those categories, as estimated by the Demographic Research Unit.	Yes (ethnic change)
Demographic Research Unit, California State Department of Finance	Demographic Research Unit Population Estimates (by age, sex, and county of origin)	UC: 1996, 2010* CSU: 1996, 2010* CCC: 1996*	UC: No CSU: No CCC: By District	Applies observed - enrollment rates for specific categories of students to projected population in those categories, as estimated by the Demogrtaphic Research Unit.	No**

*Extended forecasts.

**These forecasters are currently in the process of reviewing and revising their methodologies to accommodate consideration of additional variables.

Source: California Postsecondary Education Commission.

The community colleges' annual budget appropriations, like those of the University and State University, are largely enrollment driven. However, the manner in which the colleges' enrollments are projected and defined is dramatically different than that found in either of the universities. To begin, annual enrollments in the community colleges are measured and budgeted in average daily attendance (ADA) -- the same enrollment measuring unit used in the public school system. Average daily attendance in the community colleges is measured by a statutory formula in which 478 hours of actual class attendance or "seat time" equals one ADA. This 478-hour figure is derived by taking 525 hours -- a figure equal to one student taking a full class load for one year -- and multiplying by an "absence factor" of .911, or the percentage of students who are generally absent each day.

For budgeting purposes only, the Demographic Research Unit annually conducts a statutorily defined estimate of percentage movement in the statewide adult population. (Appendix H on pp. 55-56 offers a more detailed discussion on how the Unit estimates these population changes.) The annual estimated percentage change in adult population is then applied strictly as a budgeting formula to calculate the annual change in the community colleges' fundable enrollments for the entire system. For example, and discounting adjustments for inflation, if the Unit projects a 2 percent increase in statewide adult population for the next year, that translates for budgeting purposes into a projected 2 percent increase in fundable average daily attendance for the entire community college system.

This process is described in greater detail in Part Six below on the State budget, but it should be noted here that this approach to projecting budgetary needs does not allow "enrollment planning" in the normal sense of the term. Its most obvious shortcoming is that a shift in district adult population may or may not correspond to shifts in the size of the primary college-going age cohorts. In fact, in cases where growth in the primary college-going cohorts have outstripped growth in adult population as a whole, it is likely that ADA-based budgeting has had the effect of underfunding enrollment demand to such a degree that the enrollment in some districts, at least in high-cost programs, has been capped contrary to the intent of the Master Plan. As a result, this approach to annual budgeting in the community colleges has come under increasing criticism in recent years, resulting in the reform efforts mentioned above.

The California State University

The enrollment projections currently utilized for enrollment planning in the California State University are distinct and separate from the long-range projections discussed in the previous part of this report, although we expect that as the State University moves further along in its long-range planning efforts, the campus enrollment allocations (and the projections driving them) will more fully integrate the information and assumptions developed from the newer projections.

Initial five-year campus enrollment allocations for academic planning, capital outlay planning, and the annual support budget of the California State University are developed based on systemwide enrollment projections generated by recent campus experience and the State University's enrollment projection model, known as the California Higher Education Enrollment Projection model or CHEEP. (Appendix I on pp.56-57 contains a methodological description of this model.)

These proposed allocations are reviewed in the Office of the Chancellor by the Enrollment Planning Council before being sent to the campuses. This council is chaired by the vice chancellor for academic affairs and includes the vice chancellors for business affairs, faculty and staff relations, and university affairs plus representatives from academic affairs, resources, analytic studies, budget planning and administration, and physical planning and development divisions of the office. This composition of the council aims to insure that the enrollment allocation process receives a thorough high-level review by all of the appropriate divisions.

The proposed allocations are distributed to the campuses in February. (Display 7 on the opposite page provides a timeline for the entire enrollment projection/budget development process.) The campuses, using their own enrollment projection and planning techniques independent of the CHEEP model, may propose alternative enrollment allocations for the same five-year projection period.

Differences in the proposed allocations become the basis for discussions between the individual campuses and the Office of the Chancellor. The systemwide total enrollment projection is an overall constraint on this process. Although individual campus enrollments may be negotiated up or down, the total of all negotiations does not deviate substantially from the projected system total. The particular situations and planning objectives of the individual campuses must be balanced with the need to allocate the systemwide enrollment projection among the 19 campuses. Campuses have substantial influence, but not complete control, in determining enrollment allocations for budget purposes. The final allocations are agreed on by both the campus and the Chancellor.

The end result of the negotiation process is the enrollment allocations that are adopted as State University policy. The enrollment allocation for the next budget year becomes the official projection for developing the support budget, and the five-year allocations become the official figures used for academic planning and developing the capital outlay budget.

Allocations for the five-year projection period are updated annually as one of the first steps in the budget development process. The updates reflect the most recent enrollment experience in the system. (Display 8 on page 16 shows the most recent campus enrollment allocations available for the system.)

University of California

Enrollment planning at the University of California is an intensive effort between the Office of the President, which monitors Universitywide interests, and the campuses, which establish academic priorities. The distinguishing characteristic of

DISPLAY 7 *Timeline for the California State University's Annual Enrollment Planning Process, 1989-90 through 1993-94*

Dates	Activities
January 1988	Release of the Governor's Budget for 1988-89 (approximately January 10).
February 1988	The Chancellor releases proposed campus enrollment allocations for the five-year planning period 1989-90 through 1993-94. These allocations use the "proposed budgeted enrollments" contained in the 1988-89 Governor's Budget as a starting point
March-April 1988	Campuses enter negotiations with the Office of the Chancellor on their five-year enrollment allocation. Final revisions are decided by April. The resultant final enrollment allocation for 1989-90 becomes the official enrollment projection used for 1989- 90 budget preparations.
June-July 1988	Final Budget for 1988-89 is approved.
September 1988	The Trustees adopt their Capital Outlay Budget for 1989-90 through 1993-94 based upon the final enrollment allocations.
October 1988	The Trustees adopt their 1989-90 Support Budget based upon the final enrollment allocations for 1989-90.
October-November 1988	Academic year 1988-89 begins. Fall 1988 student registration is completed. After closure of the Fall Enrollment Census, the system updates its estimates for the current 1988-89 academic year and the 1989-90 budget cycle. If necessary, these revised estimates for the current academic year become the basis for discussion with the Department of Finance on mid-year budget adjustments. (The budget for 1989-90 may also be amended if the revised enrollment estimates for that year warrant.)
January 1989	Release of the Governor's Budget for 1989-90 (approximately January 10).

Source: Office of the Chancellor, The California State University.

University enrollment planning is its decentralized nature, coupled with extensive discussion between the campuses and the Office of the President, and frequent and regular updating and revisions resulting from a continuous process of review of actual enrollment experience and demographic expectations.

Two separate but related processes govern enrollment planning in the University:

- One sets enrollment goals for the long range, usually 15 or more years into the future, and is part of the process of long-range academic and facilities planning.
- The other provides "next-year" enrollment estimates within the context of the long-range plan and is used for annual budgeting.

Since the University's long-range plan provides the essential guideposts for annual planning, the following paragraphs describe the long-range process first.

Long-range enrollment planning: Principal responsibility for long-range enrollment planning rests with the campuses. Each campus is presently in the midst of studying the feasibility of accommodating long-range growth to the year 2005-06. The current effort is intended to update and extend the exploratory planning study presented to the Regents in October 1986, which projected growth to the year 2000-01. The principal focus of that study, as requested by the Legislature, was on graduate enrollment growth. The graduate enrollment study provided a detailed analysis of University graduate plans to that point, an in-depth look at University graduate enrollment planning, and a set of eight planning principles to guide future development of planned graduate enrollments. Because the Uni-

DISPLAY 8 The California State University Allocated Annual Full-Time Equivalent Students 1988-89 to 1993-94[1]

	Budget					Target Years[2]	
Campus	1987-88	1988-89	1989-90	1990-91	1991-92	1992-93	1993-94
Bakersfield	3,250	3,425	3,500	3,600	3,500	3,500	3,500
Chico	13,300	13,500	13,600	13,700	13,700	13,700	13,600
Dominguez Hills	5,200	5,725	5,725	5,725	5,725	5,725	5,725
Fresno	14,400	14,800	15,000	15,100	15,100	15,100	15,000
Fullerton[3]	16,500	17,100	17,400	17,600	17,700	17,800	17,900
Hayward	8,750	8,850	9,050	9,150	9,150	9,050	9,050
Humboldt	5,500	5,535	5,540	5,540	5,540	5,440	5,340
Long Beach	23,200	23,600	23,600	23,600	23,600	23,600	23,600
Los Angeles	13,300	13,500	13,500	13,600	13,600	13,500	13,500
Northridge	20,600	20,850	21,000	21,100	21,200	21,300	21,400
Pomona	13,900	14,200	14,600	15,000	15,200	15,300	15,300
Sacramento	17,950	18,250	18,550	18,950	19,300	19,550	19,550
San Bernardino	5,900	6,400	6,550	6,900	7,200	7,400	7,500
San Diego[4]	25,800	26,100	26,300	26,300	26,600	27,000	27,100
San Francisco	18,400	18,700	18,800	18,900	18,800	18,750	18,700
San Jose	19,100	19,600	19,600	19,600	19,600	19,400	19,300
San Luis Obispo	14,300	14,300	14,300	14,700	15,100	15,100	15,100
Sonoma	4,450	4,500	4,500	4,500	4,500	4,450	4,400
Stanislaus	3,550	3,700	3,750	3,800	3,850	3,900	3,900
System Totals	247,350	252,635	254,865	257,365	258,965	259,565	259,465

1. Based upon the projections of enrollment prepared by the State Department of Finance, Demographic Research Unit.
2. The target year 1992-93 is for projects previously funded for working drawings and the target year for new starts is 1993-94.
3. Includes full-time-equivalent enrollment for South County Off-Campus Center.
4. Includes full-time-equivalent enrollment for Imperial Valley Campus, Calexico, and North County Off-Campus Center.

Source: The California State University Capital Outlay Program 1988-89.

versity viewed as essential that graduate enrollments be planned in the context of undergraduate enrollment growth, the earlier study included an undergraduate enrollment study to the year 2000-01.

In carrying out the study, individual campuses pursued a wide variety of approaches and took into consideration a variety of factors, many of which were unique to their individual circumstances, including:

1. Local and regional demographic trends;
2. Local and regional economic conditions and forecasts; and
3. Individual campus assumptions on recruitment, retention, affirmative action progress, addition of new academic programs, and completion of planned capital projects.

Upon receipt of the campus' individual enrollment estimates, the Office of the President considered each proposal on its own merits and compared it with campus and systemwide enrollment forecasts generated through demographic projections prepared by the office. Upon further consultation with the campuses, resulting in some cases in changes to campus estimates, the office finalized a long-range enrollment plan and forwarded it to the campuses and the Academic Senate for review and comment. These campus plans are currently undergoing substantial review and revision, as will be discussed below.

The University's current study of long-range planning to the year 2005-06 began when the Office of the President requested from the campuses detailed undergraduate, graduate, and health sciences academic enrollment proposals for the period 1988-89 to 2005-06. The campuses submitted their proposals to the Office of the President in March, 1988. Campuses prepared their proposals to the year 2005-06 in light of their desired academic configuration and the ultimate size to which they hoped to grow. Campuses also submitted proposed postbaccalaureate teaching credential enrollments and proposed graduate enrollments by the 11 disciplinary categories used in the previous graduate enrollment study. Criteria for reviewing graduate enrollment proposals included need for research, future demands for highly trained people (especially future faculty), various enrollment and programmatic balance issues, affirmative action, selectivity and program quality, and financial support.

In the feasibility stages of the current long-range planning effort, the University has assumed that resources will be sufficient to construct the necessary buildings and hire the necessary faculty and staff to accommodate growth.

UNDERGRADUATE ENROLLMENT ESTIMATES: A major resource for projection of long-range undergraduate enrollment demand is the University's long-range demographic potential model. This model uses a standard cohort progression or survival methodology, which introduces new students at several levels (e.g., freshman, sophomore, etc.), the number varying according to a range of assumptions, and moves them forward according to currently observed rates. The projections of K-12 enrollments developed by the State Department of Finance's Demographic Research Unit provide the demographic base for projecting new University students. Specifically, the model uses projected numbers of public and private school tenth graders because these afford a demographic base that is less susceptible than numbers of high school graduates to fluctuations in the dropout rate. The model's basic rates are derived from observed numbers of new University enrollments and of corresponding tenth grade students an appropriate number of years earlier. The University extends the Demographic Research Unit's tenth-grade enrollment projections forward an additional seven years using the Unit's lower grade projections and grade progression ratios. Although projections become less reliable the further into the future they go, the University feels that the extension is justified because it is based on births that have already occurred in California and, as a result, it affords a look at the general direction of change.

The University uses the Unit's K-12 projections for its model rather than its projections of the population by age for two reasons. First, there is a closer correlation between the base and the projected enrollment potential because most new University students are recent California high school graduates. Second, school data are reported annually to the State Department of Education, whereas projections of the population by age are based on the last national census and are updated only every several years. (It should be noted that the advantages of using K-12 projections are unique to the University, owing to the homogeneous nature of the age cohort of its entering freshmen. It is unlikely that K-12 projections could serve as an appropriate demographic base for either the State University or the community colleges.)

Recent participation and continuation rates applied to the demographic base generate results that are essentially projections of the University's demographic pool. The model, however, also allows the insertion of various assumptions relating to future enrollment behavior. For example, the model contains projections of future proportions of tenth graders in the major ethnic groups in the State -- non-Hispanic White, Asian, Black, and Hispanic -- developed from ethnic censuses of the public schools by grade, which are taken every several years. These may be used in conjunction with varying assumptions concerning future participation rates for these groups to ascertain the various potential effects of ethnic change in the K-12 population on future University enrollments. (The University's most recent long-range undergraduate enrollment estimates are depicted in Display 9 on page 18.)

Other variations in the University's projections include assumptions of latent demand for one or more

DISPLAY 9 University of California Model-Based Undergraduate Enrollment Projections. 1988-89 Through 2005-06

Year	Undergraduates
1988-89	116,219
1989-90	120,621
1990-91	121,737
1991-92	121,674
1992-93	121,876
1993-94	121,921
1994-95	122,380
1995-96	123,796
1996-97	125,224
1997-98	126,994
1998-99	129,964
1999-00	132,915
2000-01	137,350
2001-02	141,580
2002-03	145,622
2003-04	150,036
2004-05	154,282
2005-06	158,425

Source: Office of the President, University of California.

campuses and the level of future participation rates. Application of various assumptions that represent probable or possible changes in the future makes the University's model useful for reviewing campus proposals.

Part of the result of the University's feasibility analysis was the long-range projections of demand for undergraduate enrollment to the year 2005-06 presented to the Regents at their October 1988 meeting. The process used to arrive at the projected graduate enrollments is described below.

GRADUATE ENROLLMENT PLANNING: While the decision-making processes are similar, feasibility analysis for graduate enrollments at the University displays several significant differences from undergraduate enrollment projection. For example, the University has made a historical commitment to accept all eligible undergraduate applicants and has been funded by the State to do so, whereas graduate enrollments are closely managed and funding for increases is negotiated with the State. These differences contribute to differences in the feasibility analysis process.

Graduate enrollment planning follows a set of eight principles, articulated in the 1987 *Graduate Enrollment Plan for 1985-86 Through 2000-01* (pp.23-46):

1. *Need for research:* Research is the means by which the University of California creates new knowledge and, in the long run, is a contributor to the economic, social, and cultural well-being of the State. Graduate enrollment increases permit expansion of this vital function both by providing apprentice researchers in the present to support ongoing University research and by training future researchers to serve society.

2. *Future needs for advanced training:* A major element in planning future graduate enrollments is an assessment of likely changes in the job markets for individuals with advanced degrees. Long-range predictions about openings and areas of growth for individuals with advanced academic and professional degrees are built on a complex array of elements: among them past and current trends, patterns of turnover and expansion, and the economic future predicted for the State. Complicating these predictions are variations in the depth of available data about the diverse job markets for advanced degree holders and the substantial time required to complete many advanced degrees, doctorates in particular.

3. *Placement:* Placement represents the responsiveness of University graduate programs to the job market for holders of advanced degrees.

4. *Balance:* Balance is an art of institutional development. The number of graduate students in doctoral and doctoral-track master's programs must be large enough to form a critical mass for effectiveness and to attract and retain an excellent faculty. The mix of graduate and undergraduate students should be such that effective education is possible at both levels. Within graduate education, there should be an appropriate mix of academic core (letters and science) and professional programs.

5. *Foreign student balance:* Balance between foreign and domestic students weighs the obligations of a major American university to ex-

tend its programs to the world as well as the nation and, in some cases, to attract the most gifted of the world's students to stay; against the obligation to assure a sufficient supply of domestic students with advanced degrees to meet America's needs.

6. *Affirmative action:* The University of California has a continuing obligation to prepare individuals with advanced degrees in a pattern that reflects the diversity of the State's population.

7. *Selectivity and program quality:* Maintaining and raising the University of California's already high admissions standards, and maintaining and increasing program quality are essential to assuring the continuing strength and preeminence of its programs.

8. *Financial support:* The ability to attract the strongest graduate students rests in part on the ability to offer them suitable support while they complete their graduate programs.

As is the case with undergraduate enrollments, the Office of the President and individual campuses engage in extensive consultation in planning for and assessing the feasibility of graduate enrollment levels according to these criteria.

The University's most recent graduate enrollment feasibility study to 2005-06 shows substantial proportional and numerical increases over the 1986 enrollment study (Display 10 shows the most recent estimates). There is no direct link between the factors implying a need for growth in graduate student enrollments and the final enrollment estimates that have been developed by the University. This is due to the subjectivity inherent in long-range economic forecasting, as well as difficulties in estimating the number of graduate students necessary to replenish a retiring faculty. Since the University will supply only a portion of the advanced degree holders needed by the private sector and for future academic positions, the precise need for growth in graduate education will be determined, in large part, by the actions of other advanced-degree-granting institutions over which the University has limited knowledge and no control.

DISPLAY 10 University of California Graduate Enrollment Estimates, 1988-89 Through 2005-06

Year	Graduate Students
1988-89	25,851
1989-90	27,348
1990-91	28,120
1991-92	28,710
1992-93	29,312
1993-94	29,881
1994-95	30,559
1995-96	31,488
1996-97	32,439
1997-98	33,295
1998-99	34,692
1999-00	36,514
2000-01	38,213
2001-02	39,860
2002-03	41,460
2003-04	43,154
2004-05	44,626
2005-06	46,431

Note: Excludes Health Science enrollments.

Source: Office of the President, University of California.

This process is fundamentally different than undergraduate enrollment planning, where the supply and demand factors operate on the State rather than the national and even international levels. Further, undergraduate enrollments can be projected with a higher level of confidence since the key factors being considered are trends driven by demographic shifts rather than economic forecasts, which are much less predictable. Hence, the University maintains that while it can discern from myriad indices that growth in graduate student enrollments is necessary, it is not possible to reach an exact enrollment estimate which flows directly from the factors implying the need for growth.

The limitations in precisely estimating the State's future needs for graduate education are illustrated by two influences among the eight listed above that were particularly important in setting the new feasibility study figures: (1) the future market for holders of advanced degrees and (2) institutional balance. A third influence leading to increased numbers was the University's new academic planning activity concerning expansion of professional education.

1. *Future market for holders of advanced degrees:* When the 1986 graduate enrollment study was being developed, key studies of faculty turnover and related changes in openings for academic jobs across all disciplines and in certain large professions pointed to the need to increase the numbers of graduate students at the University. It projected some 6,000 faculty vacancies in the 15 years between 1985 and 2000, while the State University anticipated recruiting 8,100 new faculty during the same period. By 1988, these figures had increased dramatically in view of the fact that actual enrollments were substantially above those projected in 1986 and future enrollments were likely to be correspondingly higher.

Looking to 2005-06, University officials now project the need for 9,400 faculty replacements, to which may be added as many as 770 new faculty for new campuses built to accommodate growth. In addition, in Spring 1988, State University officials reported to the Trustees a need for between 8,500 and 11,000 faculty hires on existing campuses over the upcoming 15 years and expressed serious concerns about the State University's ability under current circumstances to fill all those vacancies. Added to these needs, the California Community Colleges are now under legislative mandate to upgrade their faculty. The University is cooperating with the Chancellor's Office of the community colleges in a special study to determine the University's role in helping to meet their faculty needs over the next several years.

Nationwide, there are other indicators of the increasing need for individuals with advanced degrees. While California appears to be far ahead of other states in projecting long-term faculty turnover, professional association information has pointed to continuing trends in several key academic fields. Both the American Historical Association and the Modern Language Association continue to post annual increases in numbers of job openings. In 1988 alone, numbers of jobs advertised through the American Historical Association increased by 32 percent. The Modern Language Association reported that its published job listings doubled in foreign languages between 1983 and 1988 and doubled in English between 1984 and 1988. Shortages of engineering and science Ph.D.s in a variety of fields continue -- as illustrated by a Federation of American Societies for Experimental Biology report that demand for biologists in research is beginning to exceed supply, as numbers of positions increase and the new biotechnology companies compete for advanced degree holders.

2. *Institutional balance:* Balance is a second major planning principle contributing to an increase in the proportion of graduate students in the 1988 feasibility study. The 1986 study pointed to the serious erosion in the University's graduate student balance from 25.5 percent in 1970 to 19.2 percent in 1985. In order to focus on how the University stood in relation to its public comparison institutions, the Office of the President analyzed comparable letters and science disciplines. The University's average proportion of graduate students in these disciplines was 11.9 percent in 1985, while the public comparison group averaged 18.1 percent. The 1988 feasibility study seeks to bring the University's proportion of graduate students into line with this comparison-group average.

3. *Expansion of professional education:* An added consideration leading to an increased proportion of graduate students is the University's new major academic planning activity related to professional education. Between 1980 and 1986, no new professional schools opened at the University. Then in succession, new schools received approval in the fields of Pacific Rim studies, engineering, and architecture. To guide future development of professional education in the upcoming years, President Gardner called for a special planning effort by a new Advisory Committee on Professional Education, which held its first meeting in November 1988. Its work on identifying future needs for professional programs will have a significant effect on the need to increase numbers of graduate students.

The long-range enrollment estimates established through these undergraduate and graduate planning processes will form one of the bases for the next step in campus planning: creation of a long-range development plan for approval by the Regents.

Short-term undergraduate enrollment estimation: Short-term undergraduate enrollment estimation for annual budgeting is highly decentralized at the

University. It is conducted between each campus and the Office of the President within a framework of broad consultation. Discussions center on compatibility of expected enrollment levels with the long-range campus plans. All parties understand that the fulfillment of long-range projections does not necessarily follow a smooth curve and that annual perturbations are to be expected. Intensive discussions take place between the Office of the President and the individual campuses to negotiate any differences that may arise during the review.

Enrollment estimates driven by broad demographic trends play a relatively minor role in setting annual enrollment levels. This is due both to the unreliability of demographic estimates in a one-year time frame, as well as the superiority of other approaches which rely more, as any projection must, on individual professional judgment made in the context of recent experience.

The annual undergraduate enrollment estimation process consists of three iterations:

FIRST UPDATE: The process begins with the Office of the President's request for updates, due in late June, of current enrollment information and for proposals for campus enrollments. These are to be used in developing the submission to the Regents for the upcoming budget cycle. The campus proposals are reviewed in light of compatibility with the campuses' long-range projections and their feasibility. The Office of the President monitors these enrollment estimates and, where necessary, negotiates with the campuses to accommodate some more students at the margin in an attempt to assure that the University will meet its commitment to accept all eligible California applicants.

In negotiating these annual campus enrollment levels, several factors have previously formed the basis for discussions between campuses and the Office of the President:

1. *Academic planning issues:* Individual campuses plan for growth in a manner consistent with their long-range academic planning objectives. The effort to implement academic planning priorities can include hiring new faculty, admitting more students, and expanding facilities in those disciplines where an institution is encouraging growth and seeking or sustaining academic prominence. Campuses generally encourage expansion in fields consistent with their long-range academic goals. Matching a campus's long-range academic planning goals with short-term student enrollment demand can be especially difficult during periods of rapid, unexpected growth.

2. *Accommodation of eligible applicants:* The University has historically maintained a commitment to offer a place to all eligible California high school graduates who apply for admission, although not necessarily at the campus or in the program of first choice. The University strives to meet this commitment within the limits of each campus's feasibility to grow and is now engaged in a planning process for identifying what those limits are, when they will be reached, and the consequent need for additional capacity. In an era of rapid or unexpected growth, as the University now finds itself, providing space for eligible applicants has previously tended to override other planning considerations.

3. *Physical capacity:* An important consideration in annual enrollment planning is the physical ability of a campus to accommodate growth. This includes adequate classroom, laboratory, lecture space, and libraries; as well as space for the additional support services, administration, and faculty required to serve the increased number of students. Physical capacity constraints necessitate separate admission targets for selected programs because of differing resource requirements for instruction. This is the case in engineering, which has both high demand and high resource requirements in terms of laboratory space and special equipment. As evidenced by current overcrowding on some campuses, adequate physical capacity has sometimes been overshadowed by the University's commitment to admit all eligible applicants.

4. *Faculty and other personnel resource issues:* Enrollment growth requires more faculty, more academic support personnel, more student services personnel, and often more administrative capacity. An important constraint on annual enrollment planning is the availability of faculty and other personnel, such as student services staff. It takes time to recruit, hire, and bring new persons to the institution. With regard to new faculty, this problem is especially difficult given the extensive and meticulous nature of the hiring process. The future promises to make this constraint even more pronounced if labor shortages of qualified new faculty materialize, as expected, over the next 20 years, due

to significant anticipated increases in the number of faculty retirements.

5. *Recent problems leading to overcrowding:* The overcrowding that has occurred on a number of University campuses has resulted, at least in part, from two major causes. The first is the steady and unexpectedly large increase in participation rates that began in the late 1970s. University planners had factored some increases in participation rates into their enrollment projections because they believed latent demand existed and would be manifested when planned outreach and program improvements were initiated. They felt that these improvements would result in enrollment stability as the number of high school graduates declined in the 1980s. However, between 1977 and 1987, the enrollment rate of California high school graduates at the University rose almost 50 percent, and retention also improved. The result was sharp increases in enrollment, even as the number of high school graduates declined.

A second contributor to overcrowding was the reduction in capital funding in the University's budget during the strained State budget years of the 1970s and early 1980s. From 1970-71 to 1982-83, general campus capital outlay averaged just $18 million a year for all eight general campuses; in 1983-84 the University's total capital budget was $7 million. In addition, between 1978-79 and 1983-84, $200 million was cut from the University's operating budget. New building, improvements to existing buildings, and even routine maintenance came to a near standstill just as enrollment demand began to increase. The University budget improved dramatically starting in 1984-85, however, the improvements have not yet been able to catch up with the large backlog of deferred maintenance and obsolete equipment built up over the previous decade, although the process of catching up is well begun.

6. *Balancing campus growth with community planning goals:* An important consideration in setting annual enrollment estimates is the local community's attitude toward growth. In the past several years, the tension between campus plans for growth and community desires to limit growth have become more pronounced.

The proposed undergraduate enrollments included in the Regents' Budget are the result of these discussions and negotiations.

SECOND UPDATE: The Office of the President requests a second update in the fall, due in early November, so that the University's submission to the State for use in the Governor's Budget may take advantage of the additional information provided by the fall enrollment experience. The Office of the President reviews the updates and negotiates with the campuses, if necessary, by the same process that governs the updates submitted in late June for preparation of the Regents' Budget.

THIRD UPDATE: The Office of the President requests a third and final budget cycle update for mid to late February. The open application period for fall enrollment takes place the prior November, but applications continue to be accepted after November 30 if campus targets are not met -- a circumstance that has become less and less frequent in recent years. (Should the applications received before February indicate a substantial divergence from the expectations underlying the fall submission, the University may request an update of the enrollment estimates included in the Governor's Budget.

Capital outlay planning

California Community Colleges

The capital outlay planning process for the California Community Colleges occurs within a fairly rigid framework of separation of responsibility and authority between the various community college districts and the Chancellor's Office. The districts enjoy almost complete autonomy in developing local capital outlay priorities, but once the districts submit their capital outlay requests, the Chancellor's Office exercises central authority for developing and stewarding a single statewide community college capital outlay budget through the legislative process.

Identification of capital improvement needs: The needs identification process for capital improvements in the community colleges occurs at the campus and district levels, utilizing a wide variety of processes. As is the case with the two universities, the persons responsible for capital planning at the district level consult, to one degree or another, with deans, department chairs, faculty and others to identify perceived capital outlay needs.

While the identification of needed capital improvements is carried on throughout the campuses in a district, the manner in which these districts identify these needs varies widely -- from highly consultative to highly autocratic.

Preparation of program planning guides: Upon completion of the consultations with the campuses in a district, local facility planners translate identified capital improvement needs into a formal district-wide capital outlay program. Individual districts then begin preparing Program Planning Guides on those projects for which funding will be requested in the upcoming budget cycle. The districts find themselves at a substantial disadvantage to the University in this regard, in that like the State University, their staffing limitations do not allow them to rely on their own architects and engineering personnel to assist in developing these Program Planning Guides. Further, at both the statewide and district levels, the community colleges appear generally to have fewer staff working in facilities planning than either of the university segments. In some cases, one or two persons may assume all planning responsibilities for a multicampus district and may even have other responsibilities beyond facilities planning. As a result, local planners are almost solely responsible for developing all Program Planning Guides for a district's entire capital outlay program.

By February 1 of the year prior to which funding is being requested, the districts inform the Chancellor's Office of their capital outlay plans by submitting a Program Planning Guide for each capital project being proposed as well as a draft revision of their Five-Year Capital Outlay Plan, incorporating all projects requested through the Program Planning Guides as well as longer range projects that they expect to submit for funding in future years.

Chancellor's review of the proposals: Upon receipt of the districts' Program Planning Guides, the Chancellor's Office reviews the proposals and prioritizes them by pre-determined criteria, based on the type of capital project (new construction, remodeling, providing access for handicapped persons, and the like) and their space classification such as classrooms, lecture halls, instructional laboratory space, or faculty offices.

The requests falling within similar project type and space classifications are ranked in comparison to other colleges' need for the same type of project. This intercampus need comparison is accomplished by evaluating current utilization patterns for all capacity space on a campus. The utilization rates are expressed as a percentage. The Chancellor's Office then analyzes a campus' five-year capital outlay plan in light of the expected completion of similar projects that may already be receiving funding. It juxtaposes existing capacity plus anticipated new or renovated space against the Department of Finance's five-year enrollment projections for the campus, and it derives a projected five-year space utilization rate, taking all of the above factors into consideration. This space utilization rate is called the "capacity-to-load ratio" and is expressed as a percentage, with rates under 100 percent indicating a need for additional space, and rates over 100 percent indicating underutilization of existing or expected new space capacity. The Chancellor's Office uses the Demographic Research Unit's enrollment estimates, which were discussed previously, in calculating the capacity-to-load ratio. This ratio is the figure used to compare the relative need of different districts for similar projects.

By performing this analysis for all similar projects in the system, the Chancellor's Office is able to prioritize all proposed capital projects within a designated project type or space category. Upon completion of this process, and after consultation with the districts, the Chancellor's Office develops a comprehensive capital outlay plan for all of the districts. This program is then forwarded to the Board of Governors for review and adoption.

(Display 11 on page 24 outlines the steps in the community colleges' capital outlay process. The current priority criteria list for community college capital outlay projects is as follows:

Category A: To activate existing space.

1. To meet safety requirements and to correct hazardous conditions; to provide access for handicapped persons under Federal Section 504 regulations, providing these are categorically noted funds (federal or state) for such compliance.

DISPLAY 11 Timeline for the California Community Colleges' Annual Capital Outlay Planning Process

February	*March-June*	*July-August*
Districts provide the Chancellor's Office with proposals on all new capital outlay requests (in the form of program planning guides), as well as revisions in their five-year capital outlay plans.	**The Chancellor's Office requests additional information on project proposals, enters into negotiations with individual districts, and performs comparative needs analysis on all campus projects within similar space and/or project type categories.**	**The Chancellor's Office, based on the results of district negotiations and comparative needs analysis, makes final decisions on which projects to include in the Community Colleges' overall capital outlay request, and formulates the draft capital outlay plan for the Board of Governor's consideration in September.**

September	*October-November*	*December*	*January*
Districts submit "fiscal health" reports to the Chancellor's Office, for use in setting each district's state/local funding ratio. **The Board of Governors' considers and approves the Community Colleges' capital outlay request for the coming budget year.**	**Scope meetings are held in selected districts for which major capital outlay projects are being proposed. Minor revisions may be made in some projects, based on the results of the scope meetings.**	**The Chancellor's Office incorporates any modifications of projects resulting from Scope meetings and prepares the final version of its request for the coming budget year for transmittal to the Governor.**	**The Governor's Budget is released, including his/her proposal for the Community Colleges' capital outlay projects.** **The formal legislative portion of the process begins.**

Source: California Postsecondary Education Commission.

2. Equipment funds for previously funded projects.

3. Replacement or alterations of utility service under specific critical conditions for facility operations.

4. Alterations, renovation, or remodeling, concomitant to previously funded projects.

5. Alterations and remodeling (retrofit) for energy conservation under specific conditions.

Category B: To provide for new or remodeling of existing space for instruction and for academic and instructional support facilities.

6. Remodeling and new construction of classrooms, teaching laboratories, libraries, and learning resource centers. Projects in this classification are prioritized based on existing capacity and current and projected need (capacity-to-load ratio). Projects with the same capacity to need rating are ranked as follows:

(a) Remodeling project.

(b) New construction of classroom or teaching laboratory.

(c) New construction of library or learning resource space.

7. Remodeling and new construction of academic and instructional support facilities (includes office space). Projects within this classification will be prioritized based on existing capacity and current and projected need. Projects

with the same capacity-to-need rating are ranked as follows:

(a) Remodeling project.

(b) New construction of faculty office space.

(c) New construction of administrative office space.

(d) New construction of other support facilities.

Category C: To provide noncapacity space.

8. Land acquisition funds to relieve demonstrated capacity deficiencies of an immediate nature. (This may be for an existing campus or an approved new campus, providing the district ratio of capacity to load is less than 100 percent in the target year.)

9. Construction funds for renewal work, including air conditioning, required to improve existing instructional and/or library facilities.

10. Working drawings and/or construction funds for physical education facilities (when physical education is a program or degree requirement).

11. Working drawings and/or construction funds for theaters (if a theater arts program is offered by the college) and food service facilities.

12. Working drawings and/or construction funds for site development projects which do not have a direct relationship to the construction of a new building. (Site development that is necessary in the construction of a new building will be included with the category and item number of the priority criteria for which the building qualifies.)

13. Working drawings and/or construction funds for maintenance shops, warehouses, and all other facilities not mentioned above.

The Board of Governors gives preference to projects that have already been approved and funded for working drawings over other projects in the same category. The Board may also make exceptions to these criteria when it determines that to do so will benefit the students affected.

The Board earmarks the first available $20 million of requested capital outlay funds (slightly more or less, depending on the actual costs of particular projects) for Category A projects and the highest ranked Category B projects. It earmarks at least 20 percent of the requested funds in excess of the first $20 million for Category C projects. These allocations may be adjusted somewhat from year to year, depending on the amount of capital outlay funds that are likely to be appropriated to the community colleges.

Cost estimate and funding mix decisions: Cost estimates for proposed projects are made by local architects, with the cooperation of the Chancellor's Office and the Department of Finance. These estimates are expressed in dollars per assignable square foot and are based on historical experience with similar projects. As with the two university segments, an inflation factor is applied to historical cost information through application of an ENR (*Engineering News Record*) index. (The *Engineering News Record* annually publishes inflation factors for various types of construction projects.) The Department of Finance designates an appropriate ENR index that is then applied to the cost estimates for a specific capital project. Using this information, a total estimated cost is derived and is incorporated into the Program Planning Guide.

In mid-September in the year prior to the funding request, each district in the system submits Form 311 to the Chancellor's Office, outlining its general fiscal health. The Chancellor's Office uses this information to establish the State/local funding mix that will be applied to capital outlay proposals in each district. The current target funding mix is 90 percent State and 10 percent local financing for all capital outlay projects. However, match ratios of 95 percent State and 5 percent local funding are not uncommon; and the State has previously provided 100 percent of the capital outlay financing for some districts.

The Chancellor's Office, like the executive offices of the two universities, holds "scope" meetings in the fall prior to development of the Governor's Budget for the year in which the capital projects are being requested. It schedules these meetings in selected districts for which major capital outlay projects are being proposed and does not necessarily hold them in each district or for all projects being proposed for a district. These campus meetings include staff from the Department of Finance, the Legislative Analyst's Office, and legislative budget committee consultants, as well as key campus administrators, faculty, and staff. The purpose of the meetings is to provide State staff with the opportunity to ask questions and talk with campus faculty and facility planners about specific project proposals.

Upon completion of the scope meetings, the Chancellor's Office may make minor revisions in the districts' capital outlay requests, in order to respond to suggestions or concerns raised through the meetings. Upon completion of any changes in the plan, it forwards the community colleges' final capital outlay request to the Governor for consideration in the upcoming budget cycle, with all requested projects ranked in priority order according to the criteria previously discussed. Once the request is finalized, the Chancellor's Office enters into discussions with the Department of Finance, and the formal legislative portion of the process begins.

The California State University

The development of the State University's capital outlay program is administered by the Division of Physical Planning and Development in the Office of the Chancellor. The division works with facilities planners on the individual campuses in developing capital outlay projects. The campuses have wide discretion to identify capital outlay needs. The analysis for assessing the relative need and priority of individual projects is either conducted by the Office of the Chancellor or by the campuses within a set of well-defined planning policies, procedures, and priorities.

Elements of the capital outlay program: The *California State University 1988-1989 Capital Outlay Program* describes these planning policies and procedures as follows (pp. 103-104):

> The primary objective of the Capital Outlay Program for the California State University is to budget funds to meet approved educational programs, to provide facilities of equal quality and quantity to serve the students at the nineteen campuses, and to create an environment conducive to learning.
>
> Broad participation by those responsible has been enlisted by the campuses and the Chancellor's Office in developing the Capital Outlay Program. The following is the basis of the Capital Outlay Program 1988-89 and Five-Year Capital Improvement Program 1988-89 through 1992-93, State Funded:
>
> 1. *Approved academic master plans:* In 1963, the Board of Trustees adopted dynamic planning policies which were designed to regularize curricular development and guide program distribution in the rapidly expanding system, and facilitate the progress of each individual campus in meeting the primary function as expressed in the statewide master plan. These policies, published in the 1963 Master Plan for the California State Colleges, are still in effect. These have been summarized by Educational Programs and Resources as follows:
>
> Curricula are to reflect the needs of students and of the State.
>
> The foundation program for all campuses in the system consists of the liberal arts and sciences, business administration, and teaching. (The Board of Trustees defined specific subject areas which would be regarded as the "Broad Foundation Program.")
>
> Programs in applied fields and professions other than those above are to be allocated within the system on the basis of (1) needs of the State; (2) needs of the campus service area; and (3) identification of employment opportunities.
>
> "All campuses cannot be all things to all people." Curricula in the applied fields and professions are therefore to be located in a systemwide pattern which will achieve an equitable and educationally sound distribution of programs throughout the State.
>
> While all campuses may wish to offer the same programs, the Trustees exercise great selectivity in the final approval of new criteria.
>
> Specialized, high-cost programs are to be allocated on the basis of review and study of the individual subject area.
>
> Subsequent policies adopted by the Board of Trustees include the following:
>
> Degree programs are to be broadly based and of high academic quality.
>
> Unnecessary proliferation of degrees and terminologies is to be avoided.
>
> A formal review of existing curricula is to be conducted by each campus as part of the overall planning process.

The Academic Master Plans serve as the basis for campus master planning (facilities).

2. *Approved physical (campus) master plans:* Soon after the Board of Trustees of the California State University was established by the Legislature, it recognized the importance of each campus developing physical (campus) master plans in concert with the consulting architect and the community of each of the campuses. A physical master plan is required for each of the campuses. It is intended to serve as a guide for the physical development of the campus to accommodate a defined enrollment at an estimated target date in accordance with approved educational policies and objectives. The physical master plans encompass the ultimate physical requirements necessary to house the approved academic programs and auxiliary activities of each campus. The physical master plans consider functionally related disciplines and activities, instructional support needs, costs benefits, vehicular and pedestrian traffic flow, and aesthetics.

3. *Annual full-time equivalent student enrollment allocations:* The (capital outlay) program is based on the annual full-time equivalent student (FTES) enrollment allocations prepared by the Chancellor's Office, Division of Analytical Studies, in consultation with the campuses within the statewide projections prepared by the Department of Finance, Demographic Research Unit. Annual FTES enrollment allocations reflect the impact of year-round operations at Los Angeles, Hayward, San Luis Obispo, and Pomona as adopted by the Board of Trustees.

4. *Approved space and utilization standards:* The instructional space needs are calculated on the basis of space and utilization standards approved by the CCHE (now the California Postsecondary Education Commission) September 1966 as modified March 1971 and June 1973. The following table lists the currently approved utilization standards:

5. *Faculty allocations:* Faculty office space needs for the budget year are based upon their projected number of FTE faculty for each campus.

6. *Space and facility data base (SFDB):* All space needs to be funded in the Capital Outlay Program have been calculated by deducting the existing space inventoried and reported in the Space and Facility Data Base.

7. *Estimates of cost based upon the ENR (Engineering News Record) cost index:* The projected cost index is prepared by the Department of Finance in cooperation with the State agencies.

8. *Phasing out leased and temporary facilities:* The Board of Trustees in November 1972 resolved that all leased and temporary facilities should be phased out as soon as State funding could be secured for the replacement of the structures.

9. *Energy conservation:* Based upon ongoing audits, studies and application of the state-of-the-art control equipment, funds are requested to provide for energy conservation measures which will reduce campus energy requirements and realize cost avoidance in the utilities allotment.

10. *Alternate financing for cogeneration and other major energy efficiency improvement projects:* The Legislature introduced legislation to permit and to foster alternate financing, including tax exempt bond financing for funding energy projects or third-party financing. This was necessary because of the limited State revenues available for cogeneration and other major capital outlay energy projects. The Board of Trustees consents to these methods of financing which have been made necessary by limited State funds. The Trustees encourage the campuses to search out alternative means of financing cogeneration as a part of the CSU program to conserve energy. Alternate financing will be sought in the event that insufficient funding is available from the State Energy and Resources Fund for energy projects.

11. *Non-State funded projects are based upon financial feasibility and programmed within established planning guidelines:* The funds required to plan, construct, and operate new non-state funded facilities are other than State appropriations and ultimately come from mandatory fees, user charges and/or gifts. The State share in non-state funded projects has included providing a land base for facilities, providing in

part the utilities to auxiliary facilities, and providing the initial cafeteria. The primary types of facilities provided from non-state sources are parking, student unions, health centers, stadiums, residence halls, food services, and bookstores.

The categories and criteria to be used in setting priorities are listed in the same document and below. (This priority list is reviewed annually by the Executive Council comprised of the Chancellor, Vice Chancellor, and the Presidents. It should be noted that the priorities necessarily include various forms of maintenance of existing facilities as well as construction of new facilities.)

1. *Funds for projects of systemwide benefit*

Priorities will be assigned in the following order:

1.1 Funds for Campus Master Planning and funds to ensure the implementation of a well-coordinated multi-year Capital Improvement Program. This includes architectural and engineering studies, feasibility analysis, benefit/cost studies, and various forms of alternative project studies.

1.2 Preliminary Planning for selected projects in the next year's Capital Outlay Program.

1.3 The Systemwide Minor Capital Outlay Program (Preliminary Planning, Working Drawings, Construction, and Equipment).

1.3.1 Projects to correct hazardous code deficiencies, to meet contractual obligations or to reduce CSU legal liabilities.

1.3.2 Projects to meet retroactive code requirements which are not part of a statewide program or to correct other health and safety deficiencies (includes handicapped accessibility).

1.3.3 Projects to maintain academic programs by ensuring continuation of current services or by reducing program deficiencies.

1.3.4 Projects to enhance academic programs which will result in incorporating new or additional courses in campus curricula.

1.3.5 Projects to accomplish general improvements, including utility/site development and improvements to non-instructional support facilities.

1.4 Feasibility studies for energy conservation projects (unless funding is available from sources outside the Capital Outlay Program).

2. *Funds to correct structural, health, and safety code deficiencies*

Priorities will be assigned in the following order:

2.1 Emergency projects to remove hazards to life and property and to correct code deficiencies.

2.2 Structural strengthening projects required to correct seismic hazards.

2.3 Projects required to correct health and safety code deficiencies.

2.4 Functional rehabilitation projects in which at least 50 percent of the construction cost, exclusive of any related building addition, is attributable to the correction of structural, health and/or safety code deficiencies.

3. *Funds to make new and remodeled facilities operable*

Priorities for purchase of equipment will be assigned in the same sequence as when the project was prioritized for construction funding.

4. *Funds for critical projects*

Critical projects will be identified from Categories 5, 6, or 7 by the Chancellor's staff in consultation with the Executive Council based upon the merits of each individual project. This may include requests for any combination of preliminary planning, working drawings, construction, and/or equipment projects. Priorities will be assigned in the following order:

4.1 Critical projects for which state funding has previously been acquired.

4.2 New critical projects which have not previously been funded.

5. *Funds for construction projects*

All construction projects [including requests for construction (C) and/or working drawings and construction (WC) funding] of the types included in Categories 6 and 7 will be placed within this category. The priority of construction project requests shall be determined first on the order of previous state funding, and then on the basis of space deficit as follows:

5.1 By campuswide space deficit for projects which will provide lecture classrooms, faculty offices, libraries, or instructional noncapacity facilities.

5.2 By space deficit within a campus' academic program(s) for projects which will serve only a related specific academic discipline.

6. *Funds to eliminate existing instructional deficiencies*

Preliminary planning (P), or preliminary planning and working drawings (PW) funds for instructional buildings, libraries, and student service facilities shall be included within this category. This also includes innovative instructional facilities to meet new modes and methods of instruction. Priorities will be determined based upon relative deficiency in campus space for libraries, instruction and office needs, auditoriums and large lecture halls, including consideration of inadequate and leased space. The latest actual enrollment allocations for the current year will be used in calculating the percentages of space deficiency. If two or more auditoriums or large lecture hall projects are within 10 percent of each other in their relative space deficiency as compared to enrollment, priority shall be given to the project for which 50 percent or more of its funding will be from non-state sources. Generally, the following criteria will be used in setting priorities within this category:

6.1 A percent of deficiency in library and other noncapacity instructional space, lecture capacity, teaching laboratory capacity, and faculty offices.

6.2 Evaluation of the functional quality of facilities.

6.3 Lecture and teaching laboratory utilization.

7. *Funds to eliminate existing deficiencies of support facilities*

This category provides support facilities, including conversion and relocation projects on campuses where existing facilities are below the campus needs. Also, this category includes utilities, site development and land acquisition projects not intended to result in the provision of service to Off-Campus Centers. Priorities will be assigned in the following order based on percentage of space deficiency within the following subcategories:

7.1 Administration building projects.

7.2 Corporation yard projects.

7.3 Utility projects to correct existing deficiencies.

7.4 Access projects to correct existing deficiencies.

7.5 Land acquisitions.

7.6 General site development projects.

Process for developing the State University's capital outlay program: Campus facility planners begin the process of developing the State University's capital outlay program on individual campuses by consulting with deans, department chairs, faculty, and others to identify perceived capital outlay needs. This consultation is carried out program by program throughout the campus. The process typically begins in the Fall for the budget cycle two years hence. For example, internal campus consultations began during Fall 1988 in preparation for capital outlay requests in the 1990-91 budget cycle. Display 12 on page 30 shows a schedule for the annual capital outlay process.

Once the consultation process has commenced with the various campus constituencies, campus facilities planners translate identified physical plant needs into a specific capital outlay plan. At this point a determination is made as to whether renovation, expansion, or construction of new facilities is necessary to meet the physical plant requirements. For each project, campus planners develop a Program Planning Guide containing the specifics of each proposal.

Costing of new construction projects is generally based upon total square footage of the project and

DISPLAY 12 Timeline for the California State University's 1990-91 Capital Outlay Planning Cycle, 1988 Through 1990

Dates	Activities
September-December 1988	Campus planners begin process of identifying capital outlay projects that will be requested in the 1990-91 Capital Outlay Budget.
January 1989	Release of Governor's Budget for 1989-90, including proposals for the State University's 1989-90 Capital Outlay Program.
January-February 1989	Campuses submit draft proposals to the Office of the Chancellor on capital projects to be funded in 1990-91.
March-June 1989	Campuses provide Program Planning guides for new projects and updated versions of their five-year capital outlay plans. The Office of the Chancellor reviews these guides, negotiates with campuses, and performs comparative analysis of needs. Legislative hearings are completed on the 1989-90 budget.
July 1989	The Office of the Chancellor develops a draft capital outlay request for 1990-91 for review at the July Trustees meeting. The final 1989-90 budget is released.
August-September 1989	The Office of the Chancellor develops the 1990-91 Capital Outlay Program, which is reviewed and approved by the Trustees in September.
October-November 1989	Scope meetings are held to provide on-site briefings for the Department of Finance and the Legislative Analyst on selected major capital projects.
November-December 1989	The Office of the Chancellor incorporates any modifications of projects resulting from the scope meetings and prepares the final version of the 1990-91 Capital Outlay Program for transmittal to the Governor.
January 1990	Release of 1990-91 Governor's Budget.

Source: Office of the Chancellor, The California State University.

estimated cost per assignable square foot. The cost values are contained in a "costing guide" developed by the Office of the Chancellor. The guide incorporates information, based on experience, on the costs of capital outlay projects by type of space (lecture, lower-division laboratory, etc.). The cost data are adjusted annually for inflation using the ENR index as published in the professional journal *Engineering News Record*. The Department of Finance, in consultation with other appropriate State agencies, designates the ENR index to be used for a given type of project. These cost factors are included in the "costing guide."

In January of each year, the campuses submit a preliminary draft five-year capital improvement program and draft Program Planning Guides for all capital projects proposed for the next budget cycle. The revised five-year plan incorporates the projects requested in the program planning guides plus new projects that will be proposed in later years. The revision of the five-year plans is the mechanism by which the campuses formally notify the Office of the Chancellor of their projected capital outlay needs. By April these proposals are reviewed and modified to become the capital improvements requested for the next budget cycle.

The Division of Physical Planning and Development in the Office of the Chancellor coordinates the review of the Program Planning Guides and may request clarification or expansion of the proposals. It then prioritizes all capital projects (new construction and renovation/maintenance) for the upcoming budget cycle. It accompanies this ranking by comparing projected enrollment against existing and planned capacity and evaluating them on other critical considerations such as structural, health and safety code deficiencies.

After ranking the proposed projects within a category, the division ranks all projects according to the priority list given above. There is extensive consultation at this point with the campuses, including a review of the priority list itself, before the draft capital outlay program is presented to the Trustees for their review and approval in September.

Following approval of the program by the Trustees, the division holds "scope meetings" in the fall on campuses for which major capital outlay projects are being proposed. Scope meetings are not necessarily held on each campus nor for all projects being proposed at a given campus. They are primarily informational for the Legislative Analyst's Office (LAO) and the Department of Finance, and they represent an opportunity for them to look first hand at proposed sites and to talk directly to campus and central office personnel about specific aspects of a proposal.

Following completion of the scope meetings, the division may make minor revisions in the draft capital outlay program in order to respond to suggestions or concerns raised during the meetings. (Changes in a capital outlay request that do not change its total cost by more than 10 percent do not require approval by the Trustees). After these revisions, the Office of the Chancellor forwards the final capital outlay program to the Governor for consideration in the upcoming budget cycle which includes the Governor's Budget, released in January, and the legislative hearings held during the spring.

University of California

Capital planning at the University of California is a complex process that extends from the development of campus long-range development plans to the construction of specific projects. It is a highly decentralized process and aims to integrate the needs of individual campuses with the overall goals of the University and the external community, and it invests heavily in early, upfront planning, extensive analysis, and widespread consultation and negotiation.

Development of campus long-range development plans: At the University, capital planning and individual project approval occur in the context of each campus's long-range development plan. Approval of a long-range development plan by the University's Regents is a necessary condition for the siting of new construction projects. Each campus's development plan is based upon the academic goals of that campus and is a unique and comprehensive expression of the physical development necessary to accommodate those goals. It is used to guide day-to-day decisions about land use and environmental impact. It does not include a list of specific projects, but rather addresses issues such as optimal enrollments, landscape, functional relationships, circulation patterns, and open space.

Long-range development plans are prepared when campuses are new and are revised periodically as circumstances change. If, after approval of an plan, the desired siting of a specific project is not in accord with the plan, that project must be separately approved and the plan amended accordingly.

Under the law, the University -- like all the segments -- is required to prepare an environmental impact report for all projects, including long-range development plans, that are expected to have a significant impact on the environment. The process includes assessment and classification of potential environmental impact, internal consultation among faculty and administrators, and public review. Additional environmental review occurs whenever a long-range development plan is amended or revised. Both these plans and environmental impact reports are published documents that are available for campus, University, and public use.

Development of projects: The process for planning and seeking approval for individual projects begins at the campuses and stems from their academic programs, enrollment projections, and space plans. For projects to be funded by the State, the approval process includes the annual preparation by each campus of a capital improvement program and development by the Office of the President of the Regents' Budget for Capital Improvements. For projects to be funded by non-State sources, the approval process occurs on a project-by-project basis throughout a given year.

At the campuses, facilities planners work with faculty and administrators within individual academic units to identify facilities needs and to consider the options for meeting them. The possible outcomes may range from those that are not related to capital, to the reallocation or reassignment of space, to the renovation, expansion, or construction of facilities.

Once specific needs are identified, campuses undertake initial studies to define the details of their projects. These studies address a broad range of issues from the overall scope and cost of a project to the specific site conditions and design parameters.

As projects become more clearly defined, campuses initiate discussions with staff in the Office of the President in an effort to develop and refine proposed projects, to select those projects that should be pursued, to establish priorities among them, and to decide for which projects State funding should be sought. These efforts require campuses to consider competing needs, campus priorities, funding options, and development schedules. It means that they must undertake careful specification of their academic program needs through consultation with deans, department chairs, faculty, and senior administrators; consideration of their existing facilities and space plan; an examination of options for meeting those needs by means of renovation or expansion of existing facilities, or construction of entirely new facilities; and a number of preliminary studies that define the programmatic requirements for the project, and address technical issues related to site conditions, cost, and potential impact on the environment.

For projects to be funded by the State, each campus develops a capital improvement program proposal for submission to the Office of the President. It includes a general description of each new proposed project and a list of the campus's priorities.

Once the campuses have finalized their capital improvement programs, the Office of the President works with them to set University-wide priorities among all of the project proposals and to determine the highest priority projects to be included in the Regents' Budget for that year. In setting priorities among the various project proposals, a number of factors are considered beyond the campus's own priorities. Among these are the relative needs of the campuses for space and the relative condition of existing facilities, issues of program quality that may result from technologically obsolete facilities or major health and safety deficiencies, special program initiatives, such as the Graduate School of International Relations and Pacific Studies at the San Diego campus, the cost-effectiveness and likelihood of funding of some project proposals compared to others, the degree of preparedness of proposals in terms of how clearly a project is defined and how well it is justified, and the overall goal of constructing a budget that presents a balanced program of construction, renovation, infrastructure development, and code correction.

Preparation of project planning guides: Campuses prepare a project planning guide for each of their proposed projects. The project planning guide provides relevant information about enrollments and the academic programs to be supported by the capital project, analysis of facility requirements for the program, a detailed description of the proposed physical improvements, and a detailed budget and funding plan.

In many cases, up to two years of detailed planning is undertaken before a project proposal is ready and the project planning guide is complete. This initial planning requires a great deal of time and effort, but aims to ensure the programmatic justification and cost-effectiveness of every project for which State funds are requested.

As should be clear from this discussion, the internal process employed by the University for identifying and prioritizing capital outlay projects is highly decentralized, with substantial discretion left in the hands of the individual campuses. This level of decentralization is possible, at least in part, because the University maintains substantially larger planning staffs on the campus level than either the State University or the community colleges.

This intensive front-end planning also forms the basis for the annual Regents' Budget for Capital Improvements. This document constitutes the University's formal request for capital funding from the State for the upcoming budget year and also identifies projects for which funding is expected to be requested in subsequent years. It is transmitted to the Governor for consideration and inclusion in the Governor's Budget.

Final versions of the project planning guides are provided to the Department of Finance and the Legislative Analyst's Office in support of the funding request at the same time the Regents' Budget is sent to the State for consideration. In addition, background information on the University's capital needs and funding requests is provided through campus visits. These campus meetings include staff from the Department of Finance, the Legislative Analyst's Office, and legislative budget committee consultants, as well as key campus administrators, faculty, and staff. The purpose of the meetings is to provide State staff with the opportunity to ask questions and talk with campus faculty and facility planners about specific project proposals. University staff work closely with State staff to answer questions and provide additional information before and during formal legislative hearings on the University's capital budget.

Although the process for identifying facilities needs and defining the scope of individual projects is similar for projects to be funded from either State funds or non-State funds, there are differences in the ways individual projects are reviewed and approved. The primary difference is that projects to be funded from non-State sources are approved, not as part of a comprehensive annual program, but on a project-by-project basis throughout the year.

Display 13 below shows a general timeline of the University's process for planning and approving State-funded projects.

State budgeting

One of the strongest instruments for exerting State policy influence into public higher education is the State budget. The budget is one of the predominant points of focus for the Governor, the Legislature, and higher education leaders themselves. This importance is understandable: It is through the budget that new initiatives are often started, and it is where institutional performance is evaluated. These decisions can and do get made in other places, but there is no other place where all of the decisions come together in the same way as in the State budget.

In the context of short- and long-range planning, an understanding of the structure and dynamics of the State budget process is important for several reasons:

1. The timeline of the budget process necessarily dictates the timetable of many institutional research and planning activities.
2. The formulae and criteria applied in State budgeting will dictate many of the issues and analytic questions addressed through institutional research and planning.
3. Institutional perceptions of the budget process will likely shape the planning estimates of the availability of State resources. These estimates on the availability of future resources will inevitably affect which short- and long-range institutional goals come to be viewed as realistic.
4. The State budget process contains numerous financial incentives and disincentives for a wide range of the segments' activities. Since any institution will naturally gravitate toward where the money is, an understanding of the incentives inherent in the various State funding formulae and criteria gives important insights into a wide variety of institutional practices of the segments.

In this section of the report, Commission staff describes the system of State budgeting used in California for public higher education in three parts: first, with an overview of the State budget process; second, with a description and an analysis of the rules of the support budget process as they apply to the three systems; and finally, with a description and analysis of the rules of the capital outlay budget process as they apply to the three segments.

Throughout this part of the report, the term *public higher education* means the State-funded budgets for the University of California, the California State University, and the California Community Colleges. The analysis excludes discussion of funding for medical education, teaching hospitals, and the University's Department of Energy laboratories, as well as student financial aid, the California Maritime Academy, Hastings College of the Law, and the California Postsecondary Education Commission.

Overview of the budget process

In California, almost all expenditures and revenues are put into a single budget bill, which must be enacted by the Legislature by June 15 of each year to go into effect on July 1. This means that appropriations for all programs -- whether they are for highways, public schools, welfare, or higher education -- go into a single piece of legislation. This budget system contrasts with most other states and with the federal government, which generally pass several separate appropriations bills each year: a highway bill, a health bill, an education bill, and the like.

The fact that California puts almost all of its expenditures into one big budget bill, coupled with the fact that California is required under its Constitution to balance expenditures with revenues, has meant that the budget process in this State is generally recognized to be one of the most sophisticated in the country, because the process forces decisions about spending priorities and trade-offs between programs.

General Fund revenues -- or funds that can be spent for any purpose -- account for roughly 57 percent of all State spending in California. The various activities of State government vary widely, however, in the extent to which they are dependent on General Funds. For instance, highways are paid for with special taxes that cannot be used for anything else, whereas most health and welfare expenditures are matched dollar-for-dollar with federal funds. On the other hand, education (both K-12 and higher education) is heavily dependent on General Funds. Even in the two university systems, which have multiple sources of funds, they rely almost exclusively on General Funds for the core instructional program.

In the early post-Proposition 13 years (1978-1983), when the tax-cutting movement and a recession combined to force major cuts in General Fund programs, competition within the educational system for resources was fierce. Since that time, the Gann appropriations limit, and most recently the passage of Proposition 98, have contributed to limit even further the proportion of State General Funds that are available for expenditure in postsecondary edu-

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DISPLAY 13 Calendar of the University of California's Process for Developing the Capital Improvement Budget in a Typical Year

Month	Regents' Budget (i.e., 1990-91 Budget)
February	Office of the President (OP) issues instructions to the campuses for preparation of new budget funding requests.
March	Campuses submit requests for capital budget funding to OP.
April	Campuses submit draft PPGs and related documentation for project funding requests to OP.
June	Draft Regents' Budget is reviewed internally.
August	Campuses submit final PPGs and documentation for project funding requests to OP. Final decisions of Regents are made.
September	Regents Budget for Capital Improvements is released. Supporting documentation is sent to State.
October	OP conducts visits to campuses with State staff to review campus issues and discuss capital funding requests.
November	OP engages in discussion with Department of Finance concerning Governor's Budget.
December	OP responds to questions raised by Legislative Analyst regarding projects.

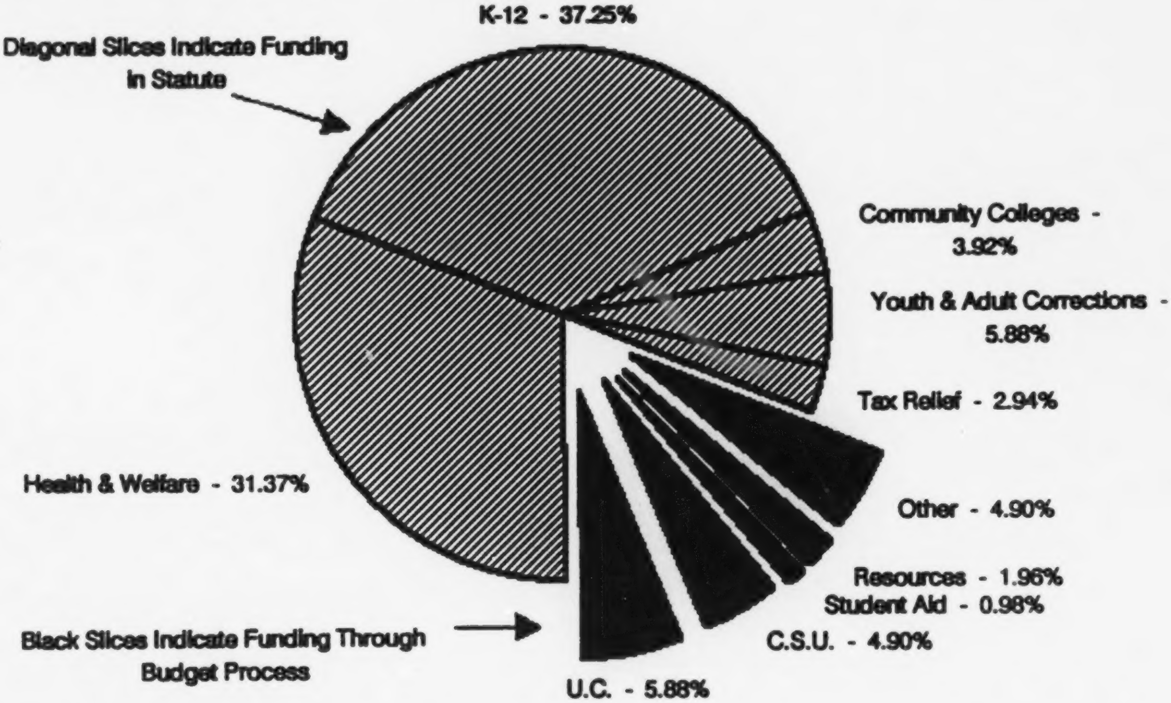
Note: It is important to understand that this calendar outlines the fundamental steps in the process for developing the Capital Improvement Budget in a typical year. The actual process is considerably more complex and less structured than the calendar may suggest.

For example, the calendar addresses the approval process for new projects in the one year in which State funding is requested; it does not reflect either the multi-year nature of that funding process or the several years of planning and project development that precede the request.

The calendar pertains only to capital projects to be State funded. It does not apply to projects to be funded from non-State sources.

Source: University of California.

DISPLAY 14 State General Fund Expenditures 1987-88



Source: Legislative Analyst's Office, *Analysis of the 1988-89 State Budget.*

cation. An additional factor constraining the availability of State General funds is the extent to which annual baseline adjustments are set in statute for certain major spending categories. This leaves the Governor and the Legislature even less flexibility in budgeting for those categories without statutorily defined funding formulas. Display 14 on the opposite page shows the distribution of State General Funds by major funding category as well as those portions of the budget for which annual funding is required through statutory mandate.

California's budget is an incremental budget. Institutions submit annual requests for funds to the Department of Finance. In general, for all programs (not just those in higher education), the Department uses agreed-on formulae to evaluate budgetary requirements. Formulae are either negotiated between the institutions and the Department, or are set in statute. These formulae use readily accessible yardsticks of workload (for example, miles of freeway, welfare caseload, or number of students) that are objective measures of how much money is required for programs. Virtually all budget formulae are developed through studies of actual spending patterns, which then serve as benchmarks for negotiations upward or downward. Because of this, budget formulae tend to perpetuate status quo spending patterns: a program that has received money in the past will continue to get it, and vice versa.

For State operations budgets, the formulae generally translate workload into personnel -- or positions -- required for the work to be done. For all programs, each year's budget is made up of the previous year's budget base, adjusted by formula for workload, plus funds for inflation (price increases) and salary increases. New program initiatives are then added to the adjusted base. New program initiatives take many forms, and can include re-calculations of the budget formulae to enrich the existing program. In most years, new program initiatives comprise a very minor percentage of total funds spent. The overwhelming majority of new funds are computed as increases or decreases to the base budget.

Incremental budgeting strongly influences institutional behavior to maximize base funding, since virtually all new money emanates from the base. (It is a curious trait of budgetary behavior that baseline adjustments are rarely thought of as budget increases.)

State operations vs. local assistance

The process used to make "baseline adjustments" is different for programs classified as State operations and those known as local assistance. This categorization is a throwback to the pre-Proposition 13 era, when local government had the primary responsibility for managing and paying for these services and programs. The severe cutbacks in property taxes that resulted from Proposition 13 have blurred these distinctions, since the State now pays for the majority of local assistance programs. The major expenditure components of the two different budget categories are outlined in Display 15 below.

DISPLAY 15 State Operations and Local Assistance

State Operations	Local Assistance
University of California	Medi-Cal
	SSI/SSP
The California State University	AFDC
	K-12 Education
Department of Corrections	Community Colleges
	Developmental Services
All other State government	Tax Relief
	Public Health

Source: California Postsecondary Education Commission.

After the Department of Finance puts together its baseline budget, the Governor reviews the budget to see if it fits his spending priorities. If the baseline costs more than projected revenues (revenue projections are also done by the Department), the Governor has the choice of making cuts or proposing a tax increase (or revenue enhancements) to the Legislature. The Governor also will make the final decisions about new programs or initiatives.

The Governor submits his proposed expenditure plan to the Legislature in January of each year. The Legislature reviews the Governor's spending plan in budget hearings held over the next five months. The Legislature can rewrite the Governor's Budget any way it sees fit (by adding, or deleting programs, or changing the source of funds for them). The Senate and Assembly versions of the budget are adopted by a two-thirds vote of the respective houses, and any discrepancies between the two are resolved in a Joint Legislative Conference Committee. After reconciling differences between the two houses' version of the budget, the final budget is sent on a two-thirds vote to the Governor by June 15.

The Governor has line-item veto power, and can reduce or delete any item of expenditure but may not increase them. The budget that is signed into law by the Governor on July 1 then goes into effect for the next fiscal year.

The power of the executive

While the political dynamic of the budget process as it affects the relation between the Governor and the Legislature is an interesting and colorful one, it has been extensively commented on elsewhere. However, one important fact about that dynamic is particularly germane to this analysis. The Legislature under the Constitution has exclusive power over all appropriations, which means that everyone -- including the Governor -- has to get the Legislature to pass a bill in order to get money. This means that two-thirds of the members of both houses have to agree in order to spend money. Because the Governor has the power to propose a single spending proposal, the power of the executive over state spending priorities is enormous. Unlike other states, California's single budget bill allows the Governor to confine his efforts to one piece of legislation. In fact, the Governor does not have to pay attention to any other legislative priorities until the budget bill is signed into law. (Under the Constitution, no spending bill -- except for emergencies -- can be signed by the Governor until the budget is enacted.)

This fact, coupled with the incremental budgeting approach, in which baseline adjustments eat up virtually all new money, the two-thirds vote requirement, and the line-item veto power, make the California budget one of the strongest executive budgets in the country.

The annual support budget process for postsecondary education

The baseline adjustment process for the two universities is the same as for all state agencies. It is a two-step process: salary increases (which include cost-of-living adjustments and merit salary adjustments), and price increases.

Salary increases in the universities: For the salary cost of living increases, requests for faculty salary increases are separated from those for staff increases. For staff increases, the universities generally ask to get the same amount that is made available to all other state agencies. For faculty salaries, the California Postsecondary Education Commission conducts an annual survey of faculty compensation for institutions across the country which are thought to be comparable to the University of California and the California State University systems. On the basis of this survey, the Commission then computes what percentage increase (or decrease) is needed to bring salary levels to parity with those offered by comparison institutions. This parity figure then becomes a benchmark for the two Governing Boards in preparing their budget requests, as well as for the Department of Finance in deciding what amount to propose to the Governor. As always, the final decision about how much to propose for faculty and for staff increases rests with the Governor.

For merit salary adjustments, formulae which are negotiated between the institutions and the Department of Finance are used to calculate the amount of money which will be needed to pay for normal merit increases and for promotions for faculty and staff. The formulae are based on studies done in the distant past of institutional advancement and promotion patterns, and differ somewhat between the institutions. The University of California gets merit and promotion funds as a percentage of the base, and the State University on a position-by-position basis. Approximately 1 percent of the salary base is allocated for merit and promotion increases for each of the two systems.

Once the Legislature is through with the budget, funds for cost-of-living adjustments and for merit increases are generally lumped into a single budget category to be spent by the institutions for employee compensation. Pursuant to the collective bargaining process, it is up to the institution (in consultation with employee groups, if there is formal collective bargaining, or less formally if there is not) to figure out how to allocate these funds.

Price increases in the universities: For non-salary price increases, the Department of Finance in the fall of each year sends to each State agency something known as the price letter which gives that year's guidelines for how much the agencies can ask for inflationary adjustments. For items where inflation has been particularly high, the Department will create a separate price category that allows higher-than-average inflationary adjustments. Examples of things that have historically had separate price category status are utilities, travel, postage, and library books. Items that are not in a separate price category are assigned an overall price level, which is usually set to equal an inflationary index known as the "Gross National Product price deflator" -- a standard index published by the federal government, which purports to measure cost increases for goods and services purchased by state and local government.

Increases for the community colleges: Community colleges receive their inflationary adjustment in the same way as local assistance budgets. A cost-of-living adjustment that is required to be given is set in statute for local assistance budgets. Unlike the two university segments, which separate salary, merit, and price-increase funding, community colleges receive a lump-sum cost-of-living adjustment on their entire base. The cost-of-living adjustment for community colleges is statutorily set to be the Gross National Product price deflator, which in 1988 was 3.8 percent. Once the institution receives the funds, it is up to the individual districts to determine how to spend the money -- on across-the-board raises, for promotions, or for non-salary increases. In most districts, these decisions are reached through the collective bargaining process.

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The result of the baseline inflationary adjustment process is that there are funding disparities between inflationary, cost-of-living adjustment, and merit salary adjustments between the two universities and the community colleges. In periods of inflation, where there are separate price categories for items of expenditure such as postage or utilities that are greater than the Gross National Product deflator, these disparities result in an apparent underfunding of the community colleges' budget. In periods of low inflation or during times when the deflator is greater than the parity figure for university salaries, the opposite is true. This latter condition -- where the disparities have advantaged the community colleges -- has not occurred during the post-Proposition 13 years. The accumulated underfunding of community colleges budgets has occurred not because of an explicit policy decision, but because of technical glitches in the funding formulae.

Workload formulae

The second part of the baseline adjustment procedure is a process for adding or taking away funds for workload. For all three systems, the workload formulae are functions of enrollments -- full-time-equivalents in the university systems, and average daily attendance in the community colleges. What this means is that the resources needed to fund all categories of expenditures -- from instruction to administration -- are related to the number of students in the institution. The biggest difference between full-time equivalents and average daily attendance as a measure is that full-time equivalents are related to the academic credit associated with a course, while average daily attendance is computed on the basis of seat-time or contact hours.

Building full-time equivalents: the credit-hour function

The critical measure for the universities that drives full-time equivalents are student credit hours (also sometimes known as the student credit units and abbreviated as "SCH" or "SCU"). A student credit hour is the credit (that counts toward graduation) that each student receives for taking a class.

Credit hours relate to the amount of time a student spends in a class. (For instance, a class that meets one hour a day five days a week is generally a five-unit class.) Student credit hours translate into full-time-equivalent students without regard to differences in discipline, or resources required to teach. For example, both universities earn the same number of full-time-equivalent students for the following:

1. A five-unit upper-division chemistry class enrolling 20 students;
2. A four-unit lower-division sociology class enrolling 25 students; or
3. A one-unit physical education class with 100 students.

A full-time-equivalent undergraduate student at both universities takes an average of 15 units during each term of the academic year. (Quarter system units are counted as roughly 1.5 times semester system units.) Therefore, one full-time-equivalent undergraduate is one student who takes 45 quarter credit units of classes during the year, or two students who together take 45 units, etc. A full-time graduate student at the University takes an average of 12 credit units during a term, as opposed to 15 at the State University.

The University, as a matter of policy, discourages part-time enrollments for undergraduates and graduates; 92 percent of its undergraduates and 96 percent of its graduate students are full-time students. The State University system encourages part-time students; only 72 percent of its undergraduates and 23 percent of its graduate students are enrolled full time. This means that there are almost twice as many students in the California State University per full-time equivalent as in the University of California.

The University's budget formulae

The enrollment-related budget formulae for the University of California are very simple. The institution gets one new faculty position, accompanied by related support, for each 17.61 full-time equivalents in enrollments. (Once a position is in the base, it automatically gets cost-of-living and merit salary adjustments each year). The University counts one full-time-equivalent enrollment for each 15 undergraduate credit hours, and one full-time equivalent for each 12 hours of class for first-stage graduate students -- for example, master's degree students and first-stage doctoral students. For students in Ph.D. programs, after they have advanced to candidacy, each of them is counted as one full-time equivalent for nine quarters, after which they can no longer be counted for enrollment purposes. Teaching assistant positions are allocated on the ratio of one position for every 44.20 full-time-equivalent undergraduates. Once the University gets the money, it makes decisions about how to spend it -- on faculty full-time equivalents, or staff, or on instructional support. The formulae generate enough money to pay for employee benefits and clerical support for each new faculty full-time equivalents.

The State University budget formulae: mode and level

The State University's budget system is much more elaborate. It has well over a hundred different workload formulae that are used to negotiate baseline adjustments with the Department of Finance. Virtually all of these formulae are enrollment related. Like the University, the key academic components -- new faculty and staff positions, library resources, and the like, are all driven by full-time equivalents and student credit hours. Unlike the University, requirements for staff for student service expenditures are driven by headcount enrollments rather than full-time equivalents.

Like the University, most State University resources are tied to new faculty positions. For new faculty positions, the State University and the Department of Finance calculate the number of positions required using a system known as the mode-and-level approach. Under the mode-and-level approach, the State University weights the student credit units by different levels and types of instruction, to take into account differences in costs for different kinds of instruction. The methodology is based on three elements:

1. The staffing categories, which consist of 16 modes (lecture, laboratory, physical education, etc.) and three levels (lower division, upper division, and graduate) of instruction;
2. Ratios of student credit units to full-time-equivalent faculty in each of these categories; and
3. The distribution of student credit units among the staffing categories.

What this means as a practical matter is that the system uses historical information (from the 1973-74 academic year) to evaluate how faculty time was spent, and then projects the number of positions required to continue that level of support against each year's enrollments. The weights that have been developed earn more faculty full-time equivalents for upper-division and graduate courses than for lower-division coursework. The effect of the formulae on the average is to allocate one new faculty position for each 18.00 full-time-equivalent students -- a ratio that historically has been very close to the one used by the University. Because of the mode-and-level approach, however, the State University is often in the position where its enrollment goes up and its budget goes down. Such was the case in 1985-86, when lower-division enrollments went up, causing an overall shift toward lower-cost instruction. Because of the shift, the State University had its budget cut by 86 full-time-equivalent faculty.

Unlike the University, the State University does not receive positions for teaching assistants, and the formulae separate allocations for new faculty positions, staff positions, and support. For each 1,000 new full-time equivalents in mode-and-level adjusted enrollments, the State University gets 55.49 new full-time-equivalent faculty, 15.25 new support staff, and 15.73 new administrative positions.

Internal allocation flexibility: internal distribution of resources

Once the universities receive funds from the State, they are free to allocate the resources in the way that they see fit to meet current priorities and accommodate student demand. The reallocation can occur in either of two places.

- First, the central administration may make some reallocation decisions between the campuses. This generally happens when enrollment patterns are uneven between the campuses, and one campus experiences declines while another grows. In both systems, if one campus is in a period of enrollment decline, resources are frequently pulled away from other campuses in order to shore them up.
- Reallocations also occur at the campus level. Faculty and other resources that are earned through enrollments in one department will be allocated to other areas, sometimes because they are under-enrolled and need the help, or because the campus

wants extra money to go into that area. In general terms, resources are reallocated away from lower-division classes, to upper-division and graduate areas.

The issue of internal flexibility for reallocation becomes contentious primarily in periods of enrollment decline. If the enrollment declines are slight or temporary, or if demand in not uneven among departments, the problem can be accommodated. However, if enrollment declines continue, the political as well as the educational costs of protecting positions in underenrolled areas becomes severe. At that point, decisions have to be made about whether to try to increase enrollments or to take away positions. Because tenured faculty positions are essentially owned by the department where tenure is earned, scaling down academic programs when student demand shifts is a very long and slow process. Because the process is such a slow one, and extracts such costs from the institutions, the preferred management option for both institutions is to keep some percentage of total faculty resources in temporary positions, assigned to faculty who cannot or will not be tenured.

For the two university systems, the issue of internal reallocation and uneven demand is kept within the institutions, since overall enrollment has been stable or growing.

Community college finance

The finance system for California's community colleges differs significantly from that used for the two university systems. The fundamental reason for the difference is historical, in that the community college system grew out of the public school system. The community colleges' finance system has gone through several upheavals in the last ten years, the biggest being Proposition 13, the imposition of tuition in 1984, the passage of AB 1725 (Vasconcellos) in 1988, and the recent voter approval of Proposition 98. As noted earlier in this paper, there is now a widespread recognition that the current system of community college finance is inadequate. It is expected that the next five years will see substantial reform in the way the community colleges are funded, as the provisions of AB 1725 and Proposition 98 are implemented.

Prior to Proposition 13, community colleges were funded 53 percent with local property tax revenues and 41 percent with State General Funds. At that time, districts that choose to tax themselves at a high rate were able to keep their funds to pay for better colleges. State funds were layered on top of the district funds and were allocated in inverse relation to district funds so as to equalize funding among districts. The relation of State and local property tax revenues has reversed since Proposition 13, and the colleges are now funded 62 percent with State General Funds and 27 percent with local property taxes. The fact that 27 percent of revenues continue to come from local property taxes may give a false impression that these funds are available for special, local purposes or are somehow susceptible to local control. The fact of the matter is that Proposition 13 eliminated local fiscal control from community colleges' local governing boards.

Appropriations to the system: On May 15 of each year, the Department of Finance notifies the Legislature and the Chancellor's Office of the community colleges of the amount of property tax revenue expected to be available during the next fiscal year. The final budget act enacted by the Legislature takes that estimate into effect in figuring how much General Funds are needed to pay for the community colleges. If the Legislature and the Governor agree that, for example, $1.5 billion will be needed to pay for the community colleges, and the May 15 estimate of property tax revenues is $500 million, then the budget act will appropriate $1 billion in General Funds to make up the difference. Each March 15, actual property tax receipts are recorded, and adjustments are again made in General Fund appropriations if revenues are higher or lower than expected.

Districts that were high property tax districts before Proposition 13, and which contribute more in revenues than other districts, simply get fewer State General Funds to make up the difference. (Districts that receive State equalization funds may get more for other purposes.) If voters want to increase their taxes to enrich the core funding for their local colleges, they cannot do it currently, since existing law requires any extra local revenues to be spent only for community service classes (which the State won't pay for), capital outlay, or furniture. Any increase in the general property tax rate for community colleges would go straight to the State to offset the need for General Funds, and not a dime of it would be seen by the district. The funding system for community colleges can therefore be seen as a thinly disguised State system.

Unlike the two university systems, most funds for community colleges are appropriated on a cash grant basis, based on enrollment, and not tied to full-time-equivalent faculty. With the exception of categorical aid programs (such as Education Opportunity Programs and Services), each college is then free to take the funds and spend them on new faculty positions, for counselors, travel, or utilities, or whatever, depending on where the highest need is. Absent normal audit controls, the only expenditure control on community colleges' main apportionments is the so-called 50-percent law, which requires that at least 50 percent of each districts' "Current Expense of Education" expenditures be spent on instructors' salaries. The quality of expenditure information available to compare the way that money is spent in the community colleges to the two university systems is very poor, since community colleges have historically not required the districts to report expenditures in uniform categories.

Allocation of statutory amounts among districts: As noted earlier in this paper, enrollment in community colleges is measured by average daily attendance (ADA). The amount of money that each district gets per ADA is sometimes known as the "foundation" or "revenue limit" level. The level is a function of various formulae that try to equalize the funding between districts and protect other legislative priorities. The "factors" that influence the amount per ADA that a district gets are:

1. Credit or noncredit. (Noncredit ADA get less money in most cases.)
2. Whether a district is growing or declining, and by how much. (In recent years, the Legislature has not allowed any growth money for community colleges. When growth was allowed, new ADA were funded on an "incremental" rate -- that is, at two-thirds on the dollar of the full ADA rate. Incremental funding is a device used in the K-12 system as well, and is justified theoretically by the argument that short-term increases in ADA can be accommodated by funding them at the margin.)
3. The size of the district. Very small districts get a little more per ADA than do larger districts, allegedly because the unit costs of administration for small districts are larger than for large districts.
4. The "wealth" of the district. Districts with low overall revenue per ADA get "equalization" funds. The equalization formula for community colleges is roughly analogous to the Serrano adjustments in the K-12 system. It is intended over time to reduce the funding disparities between districts.
5. Declines in a district's enrollment. Districts in enrollment decline have, in the last few years, been protected from having their budgets cut for two years. If a district loses 10,000 ADA one year and gets the ADA back in the second year, then the budgets are never adjusted downward.

Unlike the two university systems, there is very little room for reallocation of resources among districts by the Chancellor. The Chancellor's Office computes the effect of all of the "factors" for each district, and then allocates resources accordingly. If a district is short of funds, the Chancellor does not have the statutory authority or the funding flexibility to reallocate resources to make up for that shortfall. When such shortfalls occur, districts generally come to the Legislature to ask for more money, either in the form of supplementary appropriations or loans.

The State capital outlay process

During the summer prior to the year in which capital outlay funding is being requested, the segments provide the Department of Finance and the Legislative Analyst's Office with updates of campus long-range capital outlay plans, Program Planning Guides for any projects being requested for the coming year, and the draft system capital outlay budget. The projects are reviewed by the Legislative Analyst and the Department of Finance for consistency with stated academic planning goals, consistency with existing space and utilization standards, and the cost-effectiveness of the proposal compared to other alternatives. The relative priority of one project compared to other projects is not considered at this phase of the process.

State agency review of proposals: Upon review of the five-year plans and the various program planning guides, the Department of Finance and the

Legislative Analyst's Office arrange for and conduct Scope meetings on campuses requesting projects for which one or both agencies have questions or concerns. While attending Scope meetings, representatives of the Department and the Legislative Analyst meet with the deans, faculty, and planners most directly involved with a proposal, as well as the campus's senior administration, in order to gain a better understanding of a project and answer any specific questions they might have had. At this point, the representatives are looking for project justification on two levels: First, they look to the deans and faculty to ensure that a project is justified based on agreed-upon academic program goals and the mission of the institution and/or segment; second, they look to the chief campus planners and architects (if applicable for the segment) to ensure that the project meets agreed-upon space, utilization, and design practices.

It is important to point out that not all the segments follow all the space and utilization standards, and the standards are not imposed on the segments for all the same purposes. For example, in the community colleges the State requires that the space and utilization standards be used to calculate existing space inventory, the amount of new space required to accommodate the demonstrated need, and the purposes to which the new space can be put. On the other hand, the University of California is only required to use the standards to calculate the amount of new space required to meet their demonstrated need, and then only in certain space categories. A persuasive case which has been laid out by the University indicates that the standards may be out of date and may no longer meet important academic needs. The University is thus permitted to justify its proposals using analytic approaches other than the space and utilizations standards applied to the other segments. The Postsecondary Education Commission is currently undertaking a study to review the existing space and utilization standards and will provide recommendations to the Legislature and the Governor on how the standards should be revised, if the study determines changes are necessary. This study is scheduled for completion by next December.

Upon completion of a scope visit on a specific project, the appropriate campus or segmental facilities planners will endeavor to provide any additional information to the Department of Finance and the Legislative Analyst on questions or concerns which could not be addressed on location in the Scope meeting.

In September the segmental governing boards consider and approve the draft capital outlay budgets provided by the system's administration. These budgets may reflect changes in the cost of specific projects as a result of changes agreed upon in Scope meetings held before approval of the final budgets.

Upon adoption of the segments' final capital outlay budgets, Scope meetings continue, covering additional projects. At the same time, segmental representatives enter into extensive discussions with the Department of Finance on inclusion of their capital outlay requests into the Governor's budget. These discussions usually center on two basic issues: First, the total amount of funding likely to be made available to the segment for capital outlay; and second, how far down an individual segment's priority list their share of the available funding will allow them to cover. The Department of Finance does not usually dispute the specific capital outlay priorities defined by the segments, but rather focuses attention on the likely aggregate funding to be made available to address those priorities.

Development and analysis of the Governor's budget: Upon completion of negotiations with the segments, the Department of Finance prepares the draft State budget for the Governor's review, revision, and eventual approval.

In mid-December the Department of Finance furnishes the Legislative Analyst with confidential galleys of the Governor's budget, allowing the Legislative Analyst to begin her analysis of the budget as soon as possible after decisions are reached in the executive branch.

The Governor's budget is released publicly in early January. This is also the general deadline by which the Legislative Analyst expects any unresolved questions on the specifics of a segment's capital outlay project to be answered. This period signals the beginning of the most frenzied time of the year for the Legislative Analyst -- preparation of the Legislative Analyst's *Analysis of the State Budget*. The Analyst works intensively from the receipt of galleys in December through late February, when her *Analysis* is released publicly. The Analyst analyzes capital outlay projects included in the Governor's budget on three basic criteria: First, the project's compliance with applicable State policy guidelines, such as the policy not to provide State funding student housing or student union facilities; second, the project's compliance (depending on the segment) with applicable space and utilization standards; and finally, the reasonableness of the project's estimated cost.

Depending on the result of the analysis, the Analyst may recommend any of a number of options to the Legislature. These include:

1. Recommend adoption of the item.
2. Recommend adoption of the item, pending receipt of additional information (such as preliminary plans for the project).
3. Recommend adoption of the item, contingent upon adoption of budget language or supplemental report language that further clarifies or defines an issue of concern to the Legislature.
4. Withhold recommendation, pending receipt of additional information.
5. Recommend deletion, reduction, or revision of the scope of the item.
6. Project raises policy issue to be resolved by the Legislature.

The final recommendation option for the Analyst covers policy issues or other contingencies not dealt with in previous guidelines or agreements. One example of a policy issue raised by the Analyst in recent years is whether the University of California should give higher priority to construction of research space as opposed to instructional space.

Legislative action on the budget: After release of the Analyst's *Analysis*, legislative hearings are scheduled by the appropriate subcommittees of the Assembly Ways and Means Committee and the Senate Budget and Fiscal Review Committee. Legislative review of the segments' capital outlay budgets can cover literally any aspect of any proposed projects, however, discussions generally revolve around the issues as defined by the Legislative Analyst's Office and the Department of Finance. After extensive hearings, in which some projects receive detailed review and other noncontroversial projects minimal review, each house adopts its own version of the State budget, including the segments' respective capital outlay budgets.

After adoption of each house's version of the budget, the Legislature forms a Conference Committee, made up of the Chairs of the Senate and Assembly fiscal committees and four other members. The Conference Committee meets with the sole purpose of resolving differences between each house's version of the budget. The Committee normally does not consider any item for which there is not a discrepancy between the two budgets. It should be noted also that once an item is thrown into Conference, the Committee considers the issue under self-imposed guidelines but has complete discretion to handle the item any way it sees fit. The Committee can adopt one house's version of the item, it can augment the item, delete it completely, or attach supplementary or budget control language. Further, during Conference Committee deliberations, the Committee generally relies on advice from the Legislative Analyst and the Department of Finance on how to resolve specific issues.

Since segmental representatives are generally not permitted to address the Conference Committee during its deliberations, this is one major point in the process where the Legislative Analyst and/or the Department of Finance can utilize the mechanics of the process to effect change in segmental budget requests. By recommending the creation of discrepancies on controversial items in the Assembly and Senate versions of the budget, either control agency can effectively cut the segments out of formal deliberations to resolve the issue at the Conference Committee level. Of course the segments are completely free to make their case on an item to members of the Conference Committee outside the confines of the formal hearings.

After reconciling all budget discrepancies in Conference, the Committee forwards a unified budget back to each house for their adoption, on a two-thirds vote. Upon adoption by the Legislature, the Budget Bill is forwarded to the Governor for his review, revision, and adoption. The same blue pencil options outlined in the State Budget section of this document are operative here, except that so long as the Legislature's capital outlay appropriation for postsecondary education is within the aggregate limit set by the Governor in his initial budget, he does not usually partake in rewriting appropriation amounts in the segments' specific capital outlay proposals.

Authority to spend funds: Contrary to what many believe, after enactment of the Budget Bill by the Legislature and Governor, the process is not over. While the segments have received their appropriation for the coming year, with capital outlay programs they must still receive authority to spend the money. This authority is granted by the State Public Works Board.

The Public Works Board was created, as the name implies, to provide oversight and control on public works projects being undertaken by the State. The Board is composed of the Director of Finance, the Director of the Department of Transportation, and the Director of the Department of General Services. The Board serves to provide an additional level of administrative control to ensure that capital outlay monies are expended in a manner consistent with the intent of the Legislature and the Governor.

Specifically with regard to postsecondary education, the Public Works Board reviews approved segmental plans to ensure that specific projects are consistent with relevant budget and scope language, and other project parameters covering gross square footage, assignable square footage, primary use of the facility, and the space allocation plan envisioned in the project. Board review generally centers on certification of the appropriate completion of the previous phase of a project's development. For example, in the initial phase of a project's development, the Board does not require review in order to authorize appropriations to undertake preliminary planning for a facility. However, in the next year of the project, a segment must undergo Board review of the preliminary plans before authorization of funding for working drawings. Likewise, working drawings must be reviewed by the Board before funding for construction can be authorized. The Board does not involve itself in authorizing spending for equipment funds upon completion of a project's construction phase. The Board is also the body that reviews changes in the scope of specific capital outlay projects which may occur after the project's appropriation is made. Scope changes sufficient to trigger potential Board review can occur as a result of a project's deviation from applicable budget or supplemental report language, other agreed-upon project parameters, or changes in the estimated cost of the project. Scope changes requiring Board review can cover issues as minor as substituting carpeting for hard floors (budget control language specifically limits the segments' ability to make this change), to issues as major as substantial design changes in a proposed facility. Further, cost-overruns more than $50,000 or 10 percent of a project's appropriation require notification of the Joint Legislative Budget Committee, notification of the relevant chairs of the legislative fiscal committees, and Board approval. Cost-overruns under $50,000 or 10 percent of a project's appropriation do not require Board review, and overruns over 20 percent require legislative approval in the Budget Act.

The Department of Finance serves as the chief State control agency monitoring progress on the segments' capital outlay programs. In the event that a segment recognizes the need for Board review of a project scope change, they inform the Director of Finance. If necessitated by the proposed scope change, the Department of Finance notifies the chairman of the Joint Legislative Budget Committee and the chairs of the relevant legislative fiscal committees of the impending review, and they then have 20 days to review the scope change and advise the Board on whether or not the change is at deviance with the legislative intent of the capital outlay appropriation. If the Board receives no objection from the Joint Legislative Budget Committee after 20 days, that is taken to represent support for the scope change. After receiving input from the involved segment and the Budget Committee, the Department of Finance makes a determination as to whether or not the scope change is justified. Since the Director of Finance serves on the Board, the views of the Department on proposed scope changes are expressed through him. As an organizational matter, the Department of Finance serves as staff to the Board and is charged with ensuring that legislative intent is followed in the expenditure of capital outlay appropriations.

Upon review and approval by the Public Works Board of either a budgeted capital outlay appropriation or a scope change proposal, expenditure of the funds is authorized, and the segment can proceed with the project.

Conclusions

Long-range planning activities of the segments

1. *Overall planning capacity:* The University of California possesses a larger and more pervasive planning capacity than the State University, which in turn has a substantially larger planning capacity than the community colleges. These differences appear to impact the amount and type of short- and long-range planning which can occur, as well as the ability of the segments to articulate and analytically justify their plans once developed. We have no indication that the University of California's planning capacity is excessive, but rather that the other segments, especially the community colleges, need expanded planning capabilities. This need is especially acute on the campus/district level.

2. *Long-range planning efforts:* The University of California is well underway in a long-range planning effort which aims to define the University's likely enrollment demand and facilities needs through the year 2005. The State University has begun a parallel long-range planning effort, and the community colleges have not to our knowledge begun any sort of similar planning activities. It is likely that the immediacy of preparing for implementation of AB 1725, the recent passage of Proposition 98, and the limited planning capacity outlined in the body of this document have all contributed to limiting the ability of the community colleges to undertake this sort of effort at this time.

Enrollment planning and projections

3. *Reasonableness of enrollment projections:* The enrollment projections conducted by the segments and the Demographic Research Unit are carefully prepared and all appear to be reasonable. Any differences between individual projections are minor, on the margin, and do not change the policy implications that should be drawn from them.

4. *Community college enrollment projections:* The community colleges do not prepare their own enrollment projections, relying exclusively on the Demographic Research Unit. While the Unit's long-range estimates are sound, the absence of a process in the community colleges which forces an annual high level consideration of potential future enrollments appears to contribute to limiting the type and amount of other planning activities which occur.

5. *University of California graduate enrollment projections:* The University of California, unlike the State University, does not project graduate student enrollments based on demographic trends. Due to the overriding influence of national and even international variables on future Ph.D. enrollments (relevant only for the University of California), the University does not view it as useful to prepare estimates of future graduate enrollment levels based on demographic trends. Rather, the University's graduate enrollments are managed through application of a variety of academic, program, and State economic policy considerations, rather than demographic potentials. As a result, the University's graduate enrollment projections should be recognized as necessarily inexact estimates of future needs, based on inferences drawn from a wide variety of unquantifiable variables. The most direct quantitative link driving the University's estimates is the application of the assumption that major research universities must have a graduate/undergraduate student mix of at least 20/80 percent to maintain top-flight programs.

6. *California State University enrollment projections:* The State University's long-range enrollment projections are preliminary estimates generated in the very early stages of its own long-range planning process. The substantial increases in these projections, as compared to previous Demographic Research Unit and State University estimates, can be attributed to the fact that they incorporate optimistic assumptions on progress in providing access to historically underrepresented students. These projections were prepared by the Office of the Chancellor and precede a request to the campuses to outline the extent to which they can individually accommodate growth through the year 2005. As a result of the preliminary and ongoing nature of the State University's planning process, it is likely that these enrollment projections will un-

dergo revision over time, as a result of refinements in the projection model and discussions with the campuses.

Capital outlay planning

7. *Differences in capital outlay planning:* The segments differ in the way in which campus capital outlay proposals are internally justified and prioritized. The University grants broad discretion to campuses to develop and justify projects in a highly individualized manner. Likewise, projects between University campuses are prioritized at the systemwide level based on an individual analysis of each project and its relationship and contribution to meeting the unique academic planning goals of the campus proposing the project. On the other hand, the State University and community colleges (with differing levels of structure) assess the need for individual campus projects based on uniform systemwide need assessment guidelines. Similarly, individual campus proposals are prioritized into the systems' systemwide capital outlay budgets through explicitly defined statewide construction priorities which prioritize projects by space category and use of common "need standards." While the more centralized planning approaches utilized by the State University and the community colleges may be a necessary management decision driven by the larger size of these segments, the University of California's more decentralized approach provides a closer and more direct linkage between campus capital outlay proposals and the unique academic planning objectives of the individual campuses.

State budget and capital outlay approval process

8. *Differences in calculating workload formula:* While the State University's workload formulas are far more detailed than the University of California's, they are calculated on similar if not identical workload units (projected enrollment translated into faculty full-time equivalents). On the other hand, the community colleges' workload increases are calculated based on projected shifts in adult population translated into ADA. There are strong indications that limiting community college enrollment to adjusted shifts in adult population has had the effect of artificially "capping" community college enrollments.

9. *Differences in flexibility of internal resource allocation:* Unlike the two university systems, there is very little room for reallocation of resources among districts by the Chancellor's Office of the community college system. If a district is short of funds, the Chancellor's Office does not have the statutory authority or the funding flexibility to reallocate resources to make up for that shortfall.

10. *Differences in criteria for approval of capital outlay projects:* In the past, through the Legislative Analyst's Office the Legislature has attempted to apply roughly equivalent space and cost guidelines between segments in recommending adoption or rejection of specific capital outlay proposals. However, since there have been differing levels of success in getting the segments to agree to these standards, and differing levels of success in getting the Legislature to enforce these standards equally on all segments, a process has evolved in which capital outlay proposals are analyzed and approved under different rules, depending on the segment proposing the project. As noted earlier in this report, the validity of these guidelines have become subject to question in recent years and are currently undergoing extensive review and study by the Commission. This Commission expects to complete this study by December 1989.

Appendix A: Prospectus for a study of long-range enrollment and facilities planning in California public higher education

Background

Section 66903 of the California *Education Code* authorizes the California Postsecondary Education Commission to collaborate with the public segments on long-range planning and requires the segments to develop long-range plans that identify the need for and location of new facilities. The Commission also has responsibility for approving sites for new campuses or off-campus centers.

In addition to this statutory authorization for the Commission's involvement in long-range planning, the Commission for the Review of the Master Plan recently recommended a reinvigorated statewide planning process to be managed by CPEC (1987, p. 40):

> 24. The California Postsecondary Education Commission shall have the following responsibilities with regard to long-range planning in consultation with the segments: (1) development of a common definition of long-range planning; (2) development of a common set of assumptions upon which such planning is to be based; (3) review of segmental activities to verify that they periodically prepare and update long-range plans based upon the common set of assumptions; and (4) annual preparation of detailed 20-year projections of postsecondary enrollment in the public and private sectors at all levels of instruction, built upon the projections prepared by the Department of Finance.

In September 1987, CPEC formed an Ad Hoc Committee on Long-Range Planning to review the recommendations of the Master Plan Review Commission within the context of CPEC's overall planning priorities. The Ad Hoc Committee met three times and presented its final report to the Commission this past May 2, in which it concluded that the urgency of the planning priorities facing the State requires the Commission to assume a more active role in long-range planning (see Commission minutes of the May 2, 1988, meeting under Tab 15). It suggested that the Commission could be most effective by carving out several priority planning projects on which work could be started immediately. It presented a set of strategic planning principles that were adopted by the Commission as a litmus test for judging planning priorities, and it identified long-range enrollment and facilities planning as the highest priority project now facing the Commission. In this area, it suggested a slightly different approach than that proposed by the Master Plan Review Commission by recommending against CPEC's developing annual statewide enrollment forecasts independent from those developed by the Department of Finance.

The Ad Hoc Committee identified two major roles for the Commission to play in the area of long-range enrollment and facilities planning -- research and leadership. Its research responsibility centers on the integration of existing information as well as the development of new data, as necessary, relating to long-range enrollment and facility planning. Its responsibility of leadership centers on stimulating a focused and productive statewide debate over the major planning and policy issues surrounding long-range enrollment and facilities planning

Adding to the call for the Commission to take a lead role in long-range enrollment and facilities planning, Supplemental Budget Language has recently been introduced in the State Legislature requesting that the Commission initiate its long-range planning process by developing recommendations for the Legislature and the Governor on policy variables that will influence State costs for new facilities through the year 2005. (The Supplemental Budget Language, as well as this prospectus, defines *new facilities* as expansion of existing facilities as well as construction of new campuses or off-campus centers in order to accommodate increased enrollments.)

Based largely on recent unexpected increases in the participation rates of eligible freshmen, the University of California anticipates enrollment pressure to require new campuses by the year 2005, and the Office of the President has begun a planning process to identify options for meeting that demand. The California State University is now operating seven off-campus centers -- most of which will probably expand beyond their current size and scope, and one or two of which may become full-fledged campuses -- and it is currently planning an additional off-campus center in Salinas. Among the California Community Colleges, the Commission recently approved major expansion of an off-campus center at Petaluma in southern Sonoma County, and the Riverside and San Jacinto Community College Districts have developed plans for three new off-campus centers in western Riverside County for Commission approval.

Project justification

Currently, there is no coordinated or integrated statewide plan that determines how the State might accommodate and finance expected long-range increases in enrollment demand in public postsecondary education. At present, there are no official enrollment forecasts that encompass all three segments past the early 2000s. Although enrollment demand has been higher than expected for both the University and State University, no decision has been made as to whether these enrollments can be absorbed within existing capacity or whether new campuses will need to be built.

The decision-making, funding, and construction timelines inherent in the expansion or construction of major new educational facilities by the turn of the century require that planning begin immediately. The cost differentials between renovation of older buildings, construction of new facilities, and expansion of existing facilities need to be identified -- with the alternatives weighed in a cost-benefit context -- and mechanisms for making choices and meeting the associated costs must be developed. Transportation and other site development problems need to be identified and, when possible, integrated into local and statewide planning processes.

Finally, there is increasing State-level interest in long-term infrastructure needs, as well as concern over admissions/enrollment pressures at the University of California. Members of the Legislature and the Governor have expressed concern about the rising participation rates and the long-range costs associated with accommodating increasing enrollments. As previously mentioned, the 1988-89 budget contains language requesting the Commission to take a leadership role in this area. While it is not known as of this writing whether the language will be approved in the final Budget Act, the study outlined in this prospectus has been designed to accommodate the Legislature's mandate along with the Commission's planning priorities.

Project description

Commission staff will convene an Advisory Committee on Enrollment and Facilities Planning comprised of representatives from the Department of Finance, the University of California, the California State University, the California Community Colleges, the Association of Independent California Colleges and Universities, and the Office of the Legislative Analyst. In consultation with this group, the Commission will identify the forces that will influence demand for new educational facilities, including a review of available projections from the Department of Finance and the segments on expected enrollments through the year 2005. These forces will then be analyzed with respect to their susceptibility to State-level policy control. Based on this analysis, the Commission will submit a report by December 1989 to the Legislature and the Governor on the direction the State should take with respect to the major variables that will shape the costs of new facilities.

The report will, at minimum, include recommendations on:

1. The educational and fiscal policy variables influencing the need for new facilities by age of student and academic program type, including when traditional campus facilities are academically required and when nontraditional facilities can best meet demands for access and quality;
2. The relative State costs associated with construction of new space by segment, compared with the costs of renovation or expansion of existing facilities;
3. Space and utilization standards for public postsecondary education facilities;
4. Year-round operation as an option to reduce new facilities requirements; and
5. Priorities for construction of new sites by geographic region of the State.

Following this effort, the Commission will request the public segments to prepare enrollment plans through the year 2005 and, based on these plans, to prepare plans for facilities needed to accommodate anticipated enrollments. The latter will include plans for expansion of individual campuses and construction of new campuses or off-campus centers, as necessary. These plans are to be submitted by December 1990 to the Department of Finance, the Legislative Analyst, and the Postsecondary Education Commission for comment and review.

Relationship to other Commission planning projects

Several Commission projects are anticipated in the coming year, the results of which will be integrated into this long-range enrollment and facilities planning study. Of particular interest are studies related to space and utilization standards, the role of independent colleges and universities in postsecondary education, the development of revised guidelines for the approval of off-campus centers, and the review of admissions and transfer policies in public postsecondary education. While these projects are defined as separate Commission studies, they are also central to long-range enrollment and facilities planning. All necessary steps will be taken, when appropriate, to coordinate research efforts with the goals of minimizing duplication as well as developing a coherent and integrated Commission approach to long-range planning.

Project schedule

Staff expects to follow this schedule:

June 13, 1988: Policy Development Committee consideration of this prospectus.

June-July 1988: Formation of the advisory committee.

July-August 1988: Develop project workplan. Review and synthesis of previous State efforts in long-range educational facilities planning. Meet with segmental planning personnel and inventory segmental planning efforts. Meet with segmental enrollment planners and analyze segmental enrollment projection models. Prepare background paper.

September 1988: First meeting of the advisory committee.

November 1988: Progress report to the Policy Development Committee.

December 1988-September 1989: Draft Commission report, including policy criteria, in consultation with the advisory committee.

September 1989: Present the draft report as an information item to the Policy Development Committee.

November 1989: Present the draft report as an action item to the Policy Development Committee and the Commission.

December 1989: Transmit the report to the Governor and Legislature.

Reference

Commission for the Review of the Master Plan for Higher Education. *The Master Plan Renewed: Unity, Equity, Quality, and Efficiency in California Postsecondary Education*. Sacramento: The Commission, July 1987.

Appendix B: Differences in mission and size among the three public segments

University of California

Mission: The University of California is California's primary State-supported academic agency for research; it offers four-year undergraduate (baccalaureate) programs and graduate programs in a wide variety of fields; it has exclusive jurisdiction among public institutions over graduate instruction in dentistry, law, medicine, and veterinary medicine; and among public institutions it has sole authority to award the doctoral degree, except in fields where it awards joint doctorates with the California State University.

Campuses: The University has eight general campuses throughout California and one health science campus in San Francisco. Each campus has its own distinct atmosphere and character. Some 150 laboratories, extension centers, and research and field stations on campuses and in other parts of the State strengthen research and teaching while providing public service to California and the nation.

Enrollment: The nine campuses of the University have a current enrollment of more than 161,400 students, 90 percent of them residents of California. Almost 20 percent of the students are studying at the graduate level.

Eligibility pool: The University's freshmen are selected from among the top one-eighth (12.5 percent) of California high school graduates. Every qualified student who is a resident of California is eligible for admission at one of the University's campuses, although not necessarily at the campus or in the program of first choice. To be eligible for admission, students must meet the subject, examination, and scholarship requirements specified in the University's *Undergraduate Application Packet*.

The California State University

Mission: The primary function of the California State University is instruction of undergraduate and master's degree students in the liberal arts and sciences, applied fields, and professions, including teaching. Its faculty are authorized to undertake research to the extent that is consistent with this primary function. In addition, the State University offers joint doctoral programs with the University of California and with independent institutions in California.

Campuses: The California State University has 19 campuses throughout California. Each campus in the system has its own unique geographic and curricular character, as multipurpose institutions.

Enrollments: The system enrollments total approximately 355,000 students, who are taught by some 19,000 faculty. Last year the system awarded over 50 percent of the bachelor's degrees and 30 percent of the master's degrees granted in California. More than one million persons have graduated from the 19 campuses since 1960.

Eligibility pool: The system admits its freshmen from the top third of California high school graduates.

California Community Colleges

Mission: California Community Colleges offer instruction through but not beyond the second year of college. The primary mission of the colleges is vocational education and preparation for university transfer. They grant vocational and technical certificates and the associate in arts and associate in science degrees. Through their community service and adult education programs, they offer noncredit classes in literacy, health, civic, technical, and general education. Many colleges offer apprenticeship training in a variety of vocational fields. All colleges offer programs fulfilling the requirements for the first two years of work at a four-year college or university. Forty-five percent of all community college courses are eligible for transfer to four-year institutions. The community colleges also offer a wide range of community service courses.

Enrollments: In 1988, enrollment in the community colleges was over 1.3 million students.

Campuses: The California Community Colleges have 107 campuses that operate under 71 districts throughout the State of California.

Eligibility pool: Any person who possesses a high school diploma or equivalent or who is of the age of 18 and can benefit from instruction is eligible for admission to a California community college. Also, California community colleges allow a limited number of students of any grade level to enroll with the consent of their school principal and acceptance by the community college president.

Appendix C: Methodology for projecting California population by race/ethnicity with age/sex detail, 1980 to 2020

The Department of Finance used a baseline cohort component method to project the population by race/ethnicity. A baseline projection assumes no fundamental institutional changes or major changes to policies and practices related to fertility, immigration, emigration or domestic migration. A cohort component method traces a race/ethnic group having a common year of birth throughout their lives. As each year passes, cohorts change due to the action of mortality and migration. New cohorts are created by applying the fertility assumption to the women in childbearing ages.

The 1980 Census by sex, race/ethnicity, and single-year of age serves as the benchmark. Survival and fertility rates were computed based on actual data from the California Department of Health Services. Migration rates were estimated by analyzing 1970 to 1980 movements allowing for differential undercounts and inconsistent race/ethnic definitions between the two censuses.

Three basic assumptions were made in the projection process:

1. In 200 years, California's race/ethnic- and age-specific fertility rates will merge to one-half their current difference from national rates. The Census Bureau assumes the national race/ethnic differentials will merge in the year 2050,
2. In 200 years, California's race/ethnic-, age- and sex-specific mortality rates will merge to one-half their current difference from national rates. The Census Bureau assumes the national race/ethnic differentials will merge in the year 2050.

3. There will be an annual average net in-migration of 215,000. Foreign immigration was held constant throughout the projection period and the residual domestic migration becomes net out-migration after the year 2000. Race/ethnic distributions are merged over time from the current mix to the world, national or State proportions as appropriate.

Using these assumptions, the benchmark population is projected 40 years into the future. Projections are controlled to the Baseline '86 projection series which was released in December of 1986. It is anticipated that these race/ethnic projections will next be revised following the incorporation of data from the 1990 Census.

Appendix D: California State University and University of California enrollment projections conducted by the Demographic Research Unit

The Demographic Research Unit uses the following data in the preparation of statewide fall enrollment projections for the California State University and the University of California:

- Historical trends in participation rates;
- Recent enrollment trends;
- Current admissions policies;
- Population composition and demographic changes;
- The proportional distribution of the sexes, age groups, and enrollment categories over projection years; and
- Projected trends in past series.

An age/sex participation rate model is currently used. Historical enrollment systemwide is maintained by sex, five age groups, and undergraduate-graduate levels of enrollment. Participation rates for each of the resulting categories of enrollment are derived by dividing enrollment by the corresponding population projection for that age/sex group and multiplying by 1000. The age groups for the population and enrollment are:

Enrollment	Population
19 and under	18-19
20-24	20-24
25-29	25-29
30-34	30-34
35 and over	35-64

A linear least squares regression is one analytical tool used in the process and is performed on a ten-year history of participation rates. In those instances where recent trends appear to be departing from the long-term trend or where the regression line is not a reliable predictor of actual values, greater weight is given to the recent participation rates and enrollment trends. Recent short-term trends in participation rates may be continued or modified for the few years of the projection, and then held constant, for example. Projected total enrollment is the sum of projected enrollment for each category.

A spreadsheet showing an evaluation of the "goodness of fit" of the regression line and producing several models of projected participation rates is generated for the initial analysis.

The following explains the current models:

0: The least squares regression line is determined by the historical participation rates. The projection starts at the Y estimate for the last historical year.

1, 2, and F: Modified least squares regression lines start at the last historical participation rate for the projection. The participation rate for each projected year is calculated by multiplying the slope of the least squares line by a given value and adding that product to the participation rate of the previous year. The multipliers for each projection year are:

Year	Model 1	Model 2	Model F
1st	.8	.4	.2
2nd	.65	.35	.175
3rd	.6	.3	.15
4th	.55	.25	.125
5th	.5	.2	.1
6th	.25	.15	.075
7th	.125	.1	.05
8th	.0625	.05	.025
9th	.03125	.0	.0
10th	.015625	.0	.0

The Demographic Research Unit is in the process of evaluating its current projection model and developing a more comprehensive alternate model which could include, for example, greater age detail and separate projections for first-time, transfer, and continuing students.

Appendix E: Methodology for the preliminary enrollment projection for the California State University growth plan, 2005-06

The following projection of California State University headcount and full-time equivalent (FTE) enrollment in 2005-06 is based on California population projections and State University participation rate projections:

Students	Headcount	FTE
Undergraduate	465,500	368,100
Graduate	75,800	37,900
Total	541,300	406,000

The population projections by ethnic group are from *Projected Total Population for California by Race/Ethnicity,* (Report 88 P-4, February 1988) of the Department of Finance's Demographic Research Unit. The ethnic groups are "Asian/Other," "Black," "Hispanic," and "White."

The participation rates are based on State University experience. The rates were projected by using one-half the average rate of change observed over the past two years (i.e., 1986-87 to 1987-88 and 1987-88 to 1988-89) to adjust the rates for the next two years (i.e., for 1989-90 and 1990-91). The rates were held constant thereafter through 2005-06.

The projection was made by applying the adjusted Asian rates to the Asian/Other population and applying the adjusted white rates to the Black, Hispanic, and white population.

Appendix F: K-12 enrollment and high school graduation projections conducted by the Demographic Research Unit

A cohort survival model approach is the methodology used for projecting enrollment in grades kindergarten through twelfth grade and high school graduates. A grade progression ratio (the educational "survival rate") is multiplied by projected enrollment in one year to calculate estimated enrollment in the next grade level for the next year of the projection series.

Three key data sets are required for calculating these projections:

1. *Actual graded enrollment data:* The CBEDS Unit of the State Department of Education provides graded enrollments by county for the past ten years.
2. *Actual and projected birth data:* Actual births are collected from the Department of Health Services, Health Data Statistics Branch. The Department of Finance, Demographic Research Unit, utilizes its own estimates for projected births.
3. *Actual grade progression ratios:* Actual grade progression ratios are generated by calculating the ratio of enrollment in one grade to the enrollment in the previous grade for the preceding year.

Nine approaches are currently utilized for applying actual grade progression ratios into future years of a projection series:

1. Last year's rate. This method assumes the latest available grade progression ratios will be used for each year of the projection period.
2. Five year average. This method calculates the average actual grade progression ratio over the past five years for each grade and assumes that the resulting rates will hold constant for each year of the projection period.
3. Weighted average. This method calculates the weighted average change in actual grade progression ratios over the past three years for each grade and assumes that the resulting rates will hold constant for each year of the projection period.
4. Applying the last historical grade progression ratios (Model 1) at the beginning of the projection period, then merging to the five-year average (Model 2) over the ten-year projection period.
5. Applying the last historical grade progression ratios (Model 1) at the beginning of the projection period, then merging to the three-year weighted average (Model 3) over the ten-year projection period.

6. Applying the three-year weighted average grade progression ratios (Model 3) at the beginning of the projection period, then merging to the five-year average (Model 2) over the ten-year projection period.
7. Computing the slope of the least-squares regression from the last ten years of historical grade progression ratios and applying it to ratios over the ten-year projection period.
8. Computing the slope of the least-squares regression from the most recent five years of historical grade progression ratios and applying it to the ratios used over the first five years of the projection, then holding the ratios constant.
9. Computing the slope of the least-squares regression from the most recent three years of historical grade progression ratios and applying it to the ratios during the first three years of the projection, then holding the ratios constant.

The Demographic Research Unit of the Department of Finance utilizes the following methodology for projecting enrollment from kindergarten through twelfth grade, including high school graduates:

Actual or projected births in a given year are lagged by six years to calculate a birth to first grade progression ratio, which controls for anticipated mortality and migration. This calculation generates the entering first grade class for one year of the projection series. Projected enrollment in the second grade is computed by multiplying the selected first to second grade progression ratio to the projected first grade enrollment for the preceding year to derive second grade enrollment. The same procedure is followed for all grade levels in the projection series.

An identical approach is utilized to calculate high school graduates as is used to project graded enrollments. Graduates are projected by multiplying enrollment in the twelfth grade by the most appropriate ratio of graduates to twelfth graders in the same academic year. Projected kindergarten enrollments are derived by taking projected first grade enrollment for a given year and dividing by an appropriate kindergarten to first grade progression ratio.

Appendix G: Community College enrollment projections for capital outlay purposes conducted by the Demographic Research Unit

The enrollment projection model currently used by the California Department of Finance Demographic Research Unit to project fall enrollment for the California Community Colleges is an age/sex participation rate model which utilizes historical and projected county populations by age and sex and community college enrollment data by age, sex, and enrollment category. The population base for each community college district is the county or counties in which it is geographically located, minus any population present in military barracks or State institutions and full-time students in local four-year colleges. Population figures come from the baseline 1983 Population Projection Series of the Demographic Research Unit. Enrollment data are extracted from the Fall CCAF-130 report submitted by the community college districts to the California Community Colleges' Chancellor's Office. Ten years of historical data are available for the current projection.

For each district, enrollment is divided into the following categories:

1. Full-time day (credit)
2. Part-time day (credit)
3. Full-time evening (credit)
4. Part-time evening (credit)
5. Non-Credit

For each historical year, the five enrollment categories are divided into age groupings and related to a similar, though not always exact, population age distribution. The enrollment and corresponding population age groups by sex used are:

Enrollment	Population
19 and under	18-19
20-24	20-24
25-29	25-29
30-34	30-34
35 and over	35-64

Each comparison between the enrollment and population age group is expressed as a participation rate per 1,000 persons in the population age grouping for males and females. The participation rates for age/sex enrollment categories are extrapolated for 10 years using statistical techniques such as regression analysis. Where recent trends appear to be departing from long-term trends, or if the regression line is not a statistically reliable predictor, then greater weight is given to recent participation rates and enrollment trends.

There are five basic models used to project participation rates (with capability of adding additional models). These computer-assisted models result in five different projection lines. Several models are needed to project participation rates because of the wide variation in types of historical curves found. If none of the graphed models seems appropriate it is possible to develop a curve from the available data or hold any participation rate constant. Recent techniques include the capability to set the beginning level for the projection curve, to leave out any year's data which seem spurious, and to have a number of options for extrapolating from an ending point in the projection curve. Attached is a list of available models.

Selection of which projection line to use is subjective with the analysts who use their expertise and knowledge of each district to select what seems to be the most appropriate model. In each year the selected participation rates are applied to the appropriate projected county population population age-sex category to produce an expected number for that enrollment category and age/sex group. These categories and age groups are then summed for each year to arrive at projected total enrollment.

Enrollment figures are one part of each projection, the other being Weekly Student Contact Hours (WSCH). These hours are projected for the summed enrollment categories of total day, total evening, and non-credit. Hours per student are calculated in each of the three categories for the historical years and are trended forward for the 10 projected years. The WSCH/enrollment ratio for day students is varied, as the ratio of full-time day to total day students varies in the projections.

Weekly Student Contact Hour counts are taken from the annual CCAF-320 report submitted by the districts to the California Community College Chancellor's Office.

Model choices for community college capital outlay enrollment projections

0: Least squares regression line determined by the historical participation rates. Starts at *intercept* for the projection.

4: Least squares regression line. Starts at *last historical* participation rate. The slope of the least squares line is added to the last historical year's participation rate to derive the participation rate for the first year of the projection. The participation rate for the second year of the projection is calculated by adding the value of the slope to the previous year's participation rate. Subsequent projected participation rates are derived in the same manner.

1: Modified least squares regression line. Starts at *last historical* participation rate. The participation rate for each projected year is calculated by multiplying the slope of the least squares line by a given value and adding that product to the participation rate of the previous year. The multipliers are:

1st year of projection	.8
2nd	.65
3rd	.6
4th	.55
5th	.5
6th	.25
7th	.125
8th	.0625
9th	.03125
10th	.015625

2: Modified least squares regression line. Starts at *last historical* participation rate. The participation rates for the projected years are derived according to the same principle described in model 1. The multipliers for this model are:

1st year of projection	.4
2nd	.35
3rd	.3
4th	.25
5th	.2
6th	.15
7th	.1
8th	.05
9th and 10th	0

9: The value of the participation rate for the last historical year is kept constant for the 10 projected years. The value of the participation rate can be changed to any other value if analysis deems it necessary.

A	Average of model 1 and 4
B	Average of model 2 and 4
C	Average of model 9 and 4
D	Average of model 1 and 2
E	Average of model 1 and 9
F	Average of model 2 and 9

8: This model allows input of starting and ending participation rates for projected years. Several curves describe the yearly change in participation rate from the starting to the ending year of the projection. The difference between the starting and ending participation rate is calculated. For each year of the projection this difference is multiplied by a given value and the product is added to the *starting* participation rate. The multipliers are different for each curve. The curve represents the different assumptions underlying the change in participation rate from start to end of the projection. The starting rate of the projection is the *last historical* year's participation rate.

The ten available curves are shown below.

Appendix H: Estimates of Community College District Demographic Factors and Annual Percent Change in Adult Population

The Department of Finance has been authorized to estimate the adult population and the annual percent change in adult population for all 71 California Community College districts. Within the Department, the Demographic Research Unit annually estimates allowable statewide Average Daily Attendance (ADA) growth for budgeting purposes by conducting a statutorily defined estimate of percentage change in the statewide adult population. These percentages are used in a formula that calculates the amount of ADA growth that the State will fund. ADA is an accounting unit to measure hours of instruction. ADA in the community colleges is measured by applying the statutory formula in which 478 hours of "seat time" (actual class attendance time) equals one ADA. The 478 hour figure is derived by taking 525 hours (a figure equal to one student taking a full class load for one year) and multiplying it by an "absence factor" of .911, or the percentage of students who are generally absent each day. This authorization was enacted by Senate Bill 1641.

Section 2228(1)(a) of the Revenue and Taxation Code requires that the Department mail to California Community Colleges the estimated percent changes by May 15 of each year. By January 1, the estimates of the percent change in adult population are calculated for the current and preceding year. The estimates of adult population for the current year are referred to as "Demographic Factors." They are mailed shortly after the percent-change report. The adult population is defined as those over the age of 18 years, excluding populations in the military, California Youth Authority, Department of Corrections, and full-time students attending four-

Curve									
a	b	c	d	e	f	g	h	i	j
.50	.25	.50	.352	.253	.0	.0	.0	.0	.0
.60	.40	.60	.422	.333	.275	.400	.355	.175	.111
.70	.55	.65	.494	.416	.363	.488	.505	.278	.222
.80	.70	.70	.566	.499	.451	.576	.630	.381	.333
.85	.825	.75	.638	.582	.539	.664	.730	.484	.445
.90	.90	.80	.71	.665	.627	.752	.805	.578	.556
.95	1.0	.85	.782	.748	.751	.928	.855	.690	.667
1.0	1.0	.90	.854	.831	.803	1.0	.905	.793	.778
1.0	1.0	.95	.926	.914	.891	1.0	.955	.896	.889
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

year institutions that have 3,000 or more total students.

The Demographic Research Unit controls their own estimates of adult population to those from the Department's "E-1" estimates of total population for January 1 of the current and preceding years. These are adjusted by subtracting the under-18 population. The Unit analyzes school enrollment data and the Department's Baseline 1986 population proportions to make estimates of those under-18 population, and subtract it from the "E-1" estimates. The resulting adult population is further adjusted at the community college district level to subtract the legislated population exclusions. Because community college district boundaries are not coterminous with county boundaries in most instances, the Unit distributes the estimated adult population for counties to community college districts. To determine what proportion of a county's population goes to which district, the Unit looks at five indicators by county:

1. *Registered voters by community college districts:* By February, the first indicator the Unit receives each year is the number of registered voters by community college districts as of January 1. It is obtained through a survey. The Unit does not receive data on registered voters below the community college districts level. The four remaining indicators contain data by zip code, which is then aggregated into community college districts for each county. The Unit uses the community college to zip code correspondence file to accomplish this information that is updated annually.

2. *Residential postal drops:* By March, the next indicator the Unit receives is the number of residential postal drops for each zip code as of January 1. This data is also obtained by survey.

3. *Driver's licenses issued by the Department of Motor Vehicles:* By the end of March, the remaining three indicators are usually received. The Department of Motor Vehicles provides the Unit with a tape listing the total cumulative number of drivers' licenses issued as of January 1.

4 and 5. *State and federal income taxpayers:* The Unit receives the last two indicators from State and federal taxpayers in tape form. These data are for the previous tax year. For example, since taxpayers filed 1986 taxes in 1987, the Unit uses it as an indicator for the 1987 proportions. The Unit will not have tax indicator data for 1988 until the next cycle. For all of the other indicators, the Unit has 1988 data already. There is a year's lag for the two tax data. Therefore, the Unit moves trend proportions forward to produce a 1988 indicator. Due to the fact that taxpayer data are actual for only one of the two years, emphasis in analysis of county proportions is given to the other three indicators.

The Unit has data for all of the indicators back to 1977, except for the Department of Motor Vehicle which goes back to 1978. The Unit also has the 18-and-over population total as of the 1980 Census by zip code. The Unit was able to develop 1980 Census proportions of community college districts by county, by aggregating these data with the zip code to community college district correspondence file and with the community college district to K-12 school district correspondence file. The census-based proportions are of help to the Unit in evaluating indicators' proportions. Each indicator is not a true reflection of a community college district's adult population proportions. For example, one community college district may have fewer of its population registered as voters than another community college district. Its proportion of registered voters will therefore be smaller than its proportion of the county's adult population. The 1980 Census proportions help the Unit determine the indicators' bias as of 1980, although, of course, this bias can change over time. For example, continuing with voter registration, a voter registration drive or purge could affect the indicator's proportions and its bias. This is why the Unit feels more comfortable using more indicators than just one, hoping that influences other than population which may alter proportions over time will tend to balance out. The Unit also evaluates each indicator by graphing them over several years to see where sudden changes in proportions occur. The Unit then evaluates deviations that are not apparent in the other indicators and are probably attributable to something other than population change.

Appendix I: California State University enrollment projection methodology for setting campus enrollment allocations

The California State University relies upon one set of officially adopted enrollment projections, known as "enrollment allocations," for academic planning purposes and as the basis for its annual support and capital outlay budget requests.

Initial State University enrollment projections are prepared in late spring by the Demographic Research Unit of the Department of Finance, based on population projections and projected participation rates. The Division of Analytic Studies in the Office of the Chancellor also makes system enrollment projections covering the same time period, based on the same population projections but using participation rates and student continuation rates. The Chancellor's projections are made in early winter based on fall enrollment data. The projections are similar but not identical. The projections made by the Office of the Chancellor were initially undertaken during a period in the early 1980s when the State University's actual enrollments exceeded the Department of Finance's projections.

The computer model used to generate the State University's projections was developed by the Division of Analytic Studies and is known as the "California Higher Education Enrollment Projection" model (CHEEP). Projections of undergraduate enrollments are made by the model based upon:

1. Projections of the State's population by age and gender as provided by the Demographic Research Unit.
2. A set of participation rates for first-time students stratified by age, sex, and entering status (first-time freshman or undergraduate transfer).
3. A set of continuation rates that represent the proportion of undergraduate enrollments that continue to attend in the following year. These continuation rates are also stratified by age and sex.
4. The California Higher Education Enrollment Projection model uses fall data to project fall headcount enrollment. It then converts headcount to fall full-time-equivalent enrollment using student workload factors. Fall full-time-equivalent enrollment is then converted to academic year full-time-equivalent based on fall to academic year experience.

The student data used in the model are based on fall term census reports from 1980 to the present. The data source is the State University's Enrollment Reporting System (ERS).

The population projections prepared by the Demographic Research Unit are age and sex specific. Groups are projected for each year of age for ages 17 through 24 and then in five-year increments for ages 25 plus, e.g., 25-29, 30-34, etc.

Historic participation rates are calculated in the California Higher Education Enrollment Projection model by dividing reported age and gender specific enrollment totals (first-time freshman, undergraduate transfers) by the State population estimates for the same age and gender categories. Continuation rates are calculated by taking the ratio of one year's continuing students to the total enrollments of the previous year. Thus the model projects a given year's undergraduate enrollment by applying participation rates to the population estimate for the year to obtain projected new students (first time freshman and undergraduate transfers). Continuation rates are applied to last year's total enrollment to obtain continuing undergraduates. Total undergraduate enrollment for the given year is the sum of new students and continuing students.

The model allows the calculation and use of alternative participation and continuation rates, student workload factors and Fall to academic year ratios. Recent experience and professional judgment are the primary basis for determining the particular parameters used.

Projections of post-baccalaureate and graduate enrollments are made in the model using the same technique as for undergraduates except there is no need to project a transfer student sub-group. The total enrollment projection is the sum of undergraduate and post-baccalaureate/graduate enrollments.

2

Cost Estimates and Simulations for Capital Outlay Planning

Scope and issues of the paper

This paper describes the methodological approaches and assumptions used by the Commission and California's three public segments of higher education to estimate the capital outlay costs associated with accommodating enrollment growth to the year 2005. The data presented in this document have been provided by the segments themselves and represent their best preliminary costing analysis of how much construction of new campuses will cost the State.

In order to verify the segments' estimates, the Commission staff developed its own model to simulate capital costs for the University of California and the California State University. The staff has not been able to apply this model, which is based upon historical budget data, to the California Community Colleges because of the accounting and reporting differences among college districts prior to 1977. In spite of the different methodological approaches used by the segments to generate their own capital outlay cost estimates, the Commission staff's model produced results that are relatively close to those of the University and State University. Both approaches -- those of the segments and the Commission -- are considered reasonable, and the similarities in outcome between them lends some degree of confidence among all parties as to the reliability of the projections.

The Commission staff has consulted extensively with the segments in collecting data for this paper and is committed to continuing discussions with the segments as new and better data become available. It recognizes, however, that the cost estimates contained herein are not only changeable but likely to change, and, as a result, caution should be taken when using them.

It is not the intention of the Commission to force uniformity with regard to the methods and assumptions used by the segments, but it is the role and responsibility of the Commission to identify policy questions raised by wide variations between the segments and to determine whether or not these variations are justified on the basis of segmental differences in mission, academic program offerings, level of instruction, or other factors. This paper raises three important questions of comparability between the segments' assumptions that warrant further discussion -- questions involving (1) the "useful life" of buildings, (2) recommended space and utilization standards, and (3) differences among the segments in their ability to fund capital outlay projects.

1. *Useful life of buildings*

The segments apply substantially different assumptions about the useful life of buildings after their construction. "Useful life" is defined as the period of time over which investment in renovation is calculated to equal the initial cost of the building. The California State University and California Community Colleges both assume that their facilities will have useful life cycles of 50 years, whereas the University of California assumes that its facilities will have a useful life cycle of only 30 years. It may be that these differences in the segments' assumptions are justified, but until this is demonstrated, the difference is an issue that warrants further attention before the State moves forward in providing capital outlay financing for the segments' expansion plans.

2. *Recommended space and utilization standards*

The second issue is the implementation of the Commission's recently recommended space and utilization standards (1990). It is expected that this implementation will involve at least three steps:

- First, discussions will continue among the Legislature, the executive branch, the segments, and the Commission in an effort to obtain government authorization to implement the standards;
- Second, assuming that such authorization is ob-

tained, discussions will continue between Commission staff and segmental representatives as to the mechanics of implementing the new standards in the capital outlay planning process; and

- Third and finally, efforts will need to be taken to ensure that these standards are fully integrated into the long-range planning processes of the segments and the Commission.

3. *Funding capital outlay projects*

The third issue deals with the differentials ability of the segments to fund capital outlay projects off-budget. In this arena, the University of California has the advantage of having greater access to sources of off-budget funding than the State University and the community colleges. This difference is reflected in the capital outlay planning assumptions of the segments. For example, the University's assumptions for financing auxiliary enterprises through major sources of off-budget funds enable it to plan to provide on-campus housing for 40 percent of its total enrollment and rental housing for 10 percent of its newly hired faculty, whereas the other two segments do not operate on these assumptions, in some cases because of differential missions.

California Community Colleges

The California Community Colleges anticipate meeting their capacity needs by expanding and remodeling existing campuses, extending outreach activities, and developing new techniques for the delivery of instruction and support services. The Chancellor's Office has developed a simulation model -- the Community College Long-Range Capital Outlay Planning Model -- using microcomputer spreadsheet technology that compares existing facilities to projections of future enrollments and estimates needs in capital outlay to the year 2005.

The California Community Colleges' Long-Range Capital Outlay Plan (Attachment A, pages 79-92 below) was presented to the Board of Governors in September 1989. That report provides the findings of the initial run of the new model. Since September, the Chancellor's Office staff has updated the model and elaborated on it further, and a copy of that revision appears in Attachment B on pages 93-98. When the model is fully operational, it will examine the community colleges' long-term capital outlay needs by district and region as well as statewide.

Estimates for construction of new facilities

According to the Chancellor's Office (McIntyre, 1989), a new campus would cost an estimated $25 million for acquisition and development of an average site and $5,400 per headcount student to build needed facilities.

Estimates for site acquisition and development costs were derived from model results for the first ten new campuses projected. Using Planning Rule P, (page 92 below), the model estimated an average of $24 million to acquire and develop each site. Updating to the current ENR construction cost index, the estimate becomes $25 million per campus.

In 1988, California community colleges enrolled 1.3 million students in 31 million assignable square feet (ASF) of instructional and supporting facilities: 23.8 ASF/Enrollment. For the same year, facilities costs (Engineering News Record (ENR) = 4665) were estimated at $218/ASF or $5,200/Enrollment. Adjusting for the current ENR (4828) results in an estimated capital outlay cost per headcount student of $5,400.

Thus, for 8,000 ADA or 14,000 headcount students, the estimated size of a new campus, the estimated cost is $25 million plus $75.6 million (14,000 x $5,400), for a total of $100.6 million.

Start-up costs for new off-campus centers

Estimated capital outlay costs for off-campus centers are based on the current average cost and capacity figures of the four recently funded educational centers listed on Display 1 on page 61. The criteria for establishing a new campus are based on the current workload at existing campuses, reasonable commuting time, and the amount of instruction to be offered at outreach sites.

Capital outlay estimates for transition of off-campus centers into new campuses

According to the model, the California Community Colleges propose a new campus or an expansion of an off-campus center into a full-service campus when (1) the average size of existing campuses in a

DISPLAY 1 Capital Outlay Costs for New Education Centers, California Community Colleges

Center	Current Cost (ENR 4665)*	ASF	Capacity
Riverside Community College District			
Norco	$17,704,000	38,000	1,243 FTE
Moreno Valley	$15,079,000	39,055	1,203 FTE
Mt. San Jacinto Community College District			
West Center	$ 7,193,000	30,080	1,090 FTE
Yuba Community College District:			
Woodland	$ 5,092,000	18,012	713 FTE
Total	$45,068,000	125,147	4,249 FTE

Cost/FTE = $10,607

Cost/ASF = $360

* Costs are for working drawings, construction and equipment of new facilities including site development costs. Land acquisition, which varies from $35,000 to $400,000 per acre is *not* included.

Source: Chancellor's Office, California Community Colleges.

district exceeds 750 weekly student contact hours (WSCH) per acre, and (2) the service areas of existing campuses in a district exceeds:

Type of Service Area	Size of Service Area (in Square Miles)
Urban	100
Suburban	500
Rural	1,000

The first criterion represents a 25 percent increase in the existing utilization of campus sites. Currently, the average enrollment for a California community college is 11,000 students on 150 acres -- approximately 600 WSCH per acre. Depending on the campus's acreage and facilities capability, more or less students would be accommodated. Other considerations may be considered more important in deciding expansion, such as the regional location of programs, service area topography, and character of existing facilities. It should be noted that the projected new campuses are based on an average size of 8,000 headcount enrollment by the year 2000.

The second criterion is based on reasonable commuting time. It is assumed that commuting time should not exceed more than 30 minutes, that is, 25 minutes for traveling to and from campus and 5 minutes for finding parking space. "This assumption is then applied against expected average commuting speeds in different areas (15 mph urban, 30 mph suburban, 45 mph rural) to derive the approximate mile radius and square-mile area to be served by each campus" (Attachment B, page 95 below).

How large a community college campus grows depends upon its enrollment, acreage, topography, size of service area, and a number of other factors that are unique to local situations The cost estimates for build-out of an off-campus center are based on historical experiences.

With capital outlay costs running into the billions of dollars, it is sometimes difficult to digest these figures in a meaningful way. Hence, to capture a long-term perspective of what the capital outlay costs would be per student, we need to account for the *total* number of students that will be served over the useful life of the facilities under consideration. For this exercise, even though a 50-year life cycle is assumed by the California Community Colleges, a 30-year useful life cycle is used here to make cost comparisons comparable with the four-year segments. Display 2 on the next page demonstrates the total number of students served in a 30-year period after opening date.

A summary estimate of costs for community colleges capital outlay between now and the year 2005 derived from their planning model. The total cost for expanding existing campuses is $1,681,862,699, and the cost for building the 23 future new campuses that are necessary to accommodate growth is $953,303,882 -- or $155,009,790 a year (Display 3.)

Assumptions and methodology

The California Community Colleges planning rules and assumptions are outlined in Display 4 on pages 63-64.

DISPLAY 2   Capital Outlay Cost Estimates for Construction of New Off-Campus Centers and Built-out Campuses of California Community Colleges, in 1988 Dollars

	Total ADA Served	Cost per Campus	Cost per Student
New Off -Campus Center (Two Years of Operation)*	17,250	$ 12,198,050	$707
Mature Campus (30 Years After Establishment)	137,250	$100,600,000	$733

* Community Colleges' start-up estimates exclude land acquisition costs that varies from $0 to $400,000 per acre.

Source: California Postsecondary Education Commission.

DISPLAY 3   Capital Outlay Cost Estimates, California Community Colleges, 1988 to 2005

Period	Characteristic	Existing Campuses	New Campuses	Total
1988	Number of campuses	107	0	107
	Enrollment	1,333,191	0	1,333,191
	Total Assigned Square Feet	31,145,732	0	31,145,732
2005	Number of campuses	107	23	130
	Enrollment*	1,756,776	120,232	1,877,008
	Total Assigned Square Feet	36,263,824	2,861,522	39,125,346
Seven-Year Change	Number of campuses	0	23	23
	Enrollment	423,585	120,232	543,817
	Total Assigned Square Feet	5,118,092	2,861,522	7,979,614
Cost Estimates	Acquire/Develop Sites	$0	$306,600,000	$306,600,000
	Construct and Equip	1,681,862,699	646,703,882	2,328,566,581
Total		$1,681,862,699	$953,303,882	$2,635,166,581
Total per Year				$155,009,790

* This "alternative" enrollment projection was prepared in August 1989 by the Chancellor's Office of the Community Colleges and is based on each district returning to its "more normal" participation rate (enrollment divided by population) that existed prior to the "abnormal" budget cuts and fee increases that occurred between 1982 and 1984.

Source: Chancellor's Office, California Community Colleges.

DISPLAY 4 Planning Rules and Assumptions, Community College Long-Range Capital Outlay Planning Model

A. The future balance of district lecture and laboratory weekly student contact hours (WSCH) is based on the district's 1989 experience as derived from its Five-Year Facilities Plan.

B. The district's recent ratio of WSCH/full-time equivalent instructional staff; i.e., staffing practice will remain constant over time.

C. The district's existing ratio of off-campus to on-campus WSCH is used to derive the future need for off-campus space.

D. The existing statewide ratio of non-capacity to capacity space (.33) is used to derive a district's future need for non-capacity space.

E. The ratio of available or funded ASF to needed ASF must drop below:

Space Type			
Lab	Lecture AV/TV/Library	Office Non-Capacity	District Type
.96	.92	.88	Multi-Campus
.92	.88	.84	Single Campus

before more such space is built; but, when built, the "facility" or space increment is sized to the capacity needed (according to standards) two years beyond the time the space is to be occupied.

F. The following cost schedule is used:

Project Type	Total Cost for W, C, E ($/ASF)
Lecture	$173
Laboratory	250
Office	190
AV/TV/Library	225
Non-Capacity	217

District costs are adjusted further by the "construction multiplier" to reflect the variation across areas of the State.

G. Three years are required, on the average, to prepare working drawings (W), and to construct (C) and equip (E) a facility. Under this schedule, the project appropriations are spread in the following way:

Year 1:	8% of total cost	Working Drawings
Year 2:	76%	Construct
Year 3:	16%	Equip

The facility is occupied and its capacity added to the district's total capacity in Year 4 (the year after this kind of space dropped to less than that needed, see planning Rule E). To avoid illegal projects (<$150,000) or scale diseconomies, no less than 1,000 ASF of any kind of space will be built at any one time.

H. It will be possible to maintain existing ratio of leased and rented: free/owned spaces that are utilized off campus.

I. Needs for new space will be met by remodeling one or more of the other four types of space if the have/need ratio(s) of such space(s) exceed(s):

District with Enrollment	Per campus
1.5 for multi-college	<5,000
1.4 multi-college	>5,000
1.4 single-college	<5,000
1.3 single-college	>5,000

in the target year (two years beyond occupancy of remodeled facility; but, in any case, remodeling shall not reduce remodeled categories to capacity/need ratios of less than 1.1). (As of August 1989, this rule is not in the model).

J. General remodeling (GR) needs due to functional or programmatic obsolescence (as opposed to maintenance) is derived by the following variation of the Sherman Dergis (1981) formula:

$GR = (a) \quad (2/3\ rpv) \quad (age/1275)$

where

a = the fraction (say, 1/4) of buildings' ASF expected to become functionally or programmatically obsolete during their lifetimes,

(continued)

DISPLAY 4, continued

rpv = 1988-89 replacement value of buildings ($164/ASF),

2/3 = proportion of buildings (outside of foundation, outside walls, etc.) needing remodeling; and

1275 = assumption of 50-year building life.

K. Operating budget expenditures for building maintenance in 1988-89 are expected to continue at that level.

L. New maintenance needs (M) are based on the Sherman-Dergis (1981) formula:

$$M = [\,(2/3)\,(rpv)\,]\;[\,(age)\,/\,(1275)\,]$$

This assumes (a) an average life of 50 years for buildings, (b) that 2/3 of any building will need maintenance, and (c) the 1988-89 replacement value for buildings.

M. One-fifth of existing deferred maintenance is eliminated each year and, to be funded, must exceed $10,000 in any given year.

N. New campuses (or centers that may become campuses) are proposed when (a) the average size of existing college(s) exceeds 600 WSCH/acre and (b) the district service area exceeds:

Type of Service Area	Size of Service Area (in Square Miles)
Urban	100
Suburban	500
Rural	1,000

The acreage for a new campus site is assumed to be 120 acres.

O. New centers are proposed when . . . (criteria to be developed at a later date).

P. Costs to acquire and develop new sites vary across the State. The following schedule is used:

	Acquire Site ($/acre)	Develop Site ($/acre)
Urban	$500,000	$40,000
Suburban	250,000	40,000
Rural	25,000	40,000

Source: Chancellor's Office, California Community Colleges.

The California State University

In estimating likely capital outlay costs associated with growth, the California State University has used average (historical) capital outlay costs on a per full-time-equivalent basis to project future construction costs. It assumes a 50-year life cycle for its buildings and a 2 percent annual renovation expenses calculated on total capital stock.

The State University has developed three different capital outlay cost estimates for different stages of growth:

- The first is a cost per/FTE for construction of a new off-campus center built as a new permanent facility.
- The second is for expanding an existing campus to accommodate additional growth.
- The third is for transition of an off-campus center into an entirely new campus.

1. *Estimated start-up costs for constructing new permanent off-campus centers*

The capital costs for a new permanent facility for an off-campus center were estimated from the capital outlay costs associated with the Contra Costa Off-Campus Center as shown in Display 5 on the opposite page. The capital outlay costs for this new permanent off-campus center was estimated at $27,920,000 for 1,500 FTE, or about $18,613 per FTE.

Estimating the costs associated with the State University's growth plan were based upon the assumption that three off-campus centers with 4,500 total FTE will be established and will be housed in permanent state-owned facilities by 2005-06. The other centers will continue to be housed in leased-/borrowed facilities. Utilizing the Contra Costa center base cost of $18,613 per FTE, and multiplying it by 4,500 FTE yields a total of cost $83,758,500 over the 15 years 1991-2005, or an average of $5,583,900 per year. Land costs are not included in these estimates.

2. *Estimated costs for expanding existing campuses*

The enrollment range used to estimate the cost factor per/FTE for expansion of an existing campus is 5,000 to 25,000 FTE. The State University has esti-

DISPLAY 5 *Capital Outlay Program for the Contra Costa Off-Campus Center of the California State University, Hayward, 1989-90*

Project	Statewide Priority	Total Cost	Funded Prior to 1989/90	Phase	1989/90 Request	Phase	Required After 1989/90 Completion	Phase	FTE
A. Previously Approved									
Infrastructure I	OCC 5	$4,361,000	$385,000	PW	$3,976,000	C	$0		
Initial Facility	OCC 6	12,353,000	611,000	PW	10,777,000	C	965,000	E	1,001
Total		16,714,000	996,000		14,753,000		965,000		
B. New									
Infrastructure II	OCC 7	11,206,000	0		602,000	PW	10,604,000	C	
Total		11,206,000	0		602,000		10,604,000		
Grand Total		$27,920,000	$996,000		$15,355,000		$11,569,000		

A = Acquisition E = Equipment W = Working Drawings C = Construction P = Preliminary Plans

Source: Office of the Chancellor, The California State University.

mated that its existing main campuses will have a capacity in the year 2005-06 of 344,100 FTE, compared with the projected enrollment capacity of these campuses in 1990-91 that is estimated to be 257,208 FTE -- a growth of 86,892 FTE. This 86,892 projected "excess" enrollment demand is expected to be accommodated by expanding existing campuses over the next 15 years, with growth averaging 5,376 FTE per year. The total cost to expand San Marcos from 5,000 to 25,000 FTE is estimated at $361,852,000 or $18,093 per FTE ($361,852,000/20,000 FTE). This figure is consistent with estimates derived from analysis of historic expansion costs at existing CSU campuses. Using this cost estimate as the base, the estimated total cost of expanding existing campuses to accommodate the projected FTE growth would be $1,572,137,000 for the 15-year period or, on average, $104,809,000 a year.

It is estimated that the lead time for a new campus to evolve from an existing off-campus center would be about three to five years.

3. *Estimated costs for the transition of off-campus centers into new campuses*

The enrollment range used to estimate the cost factor per FTE for a new State University campus is 0-5,000. The initial capital outlay costs for CSU San Marcos's historical experience is illustrated in Display 6 on page 66. San Marcos's initial cost is $55,033,000 for planning, site development, infrastructure, building construction, and equipment; plus $8,500,000 for initial library volumes for a total of $63,533,000, in current dollars. This creates a new campus with an enrollment capacity of approximately 2,000 FTE students. The initial start-up cost for the new institution is $31,767 per FTE. An additional $101,334,000 is estimated to be necessary to build the new campus to 5,000 FTE students. Display 7 on page 67 delineates the projected cost of each capital project per campus size.

The total cost for a campus of 5,000 FTE students is

DISPLAY 6 Capital Outlay Program for the California State University, San Marcos, 1989-90

Project	State Wide Priority	Total Cost	Funded Prior to 1989/90	Phase	1989/90 Request	Phase	Required After 1989/90 Completion	Phase	FTE
A. Previously Approved									
Infrastructure/ Site Development	OCC 1	$10,193,000	$492,000	PW	$9,701,000	C	$0		
Physical Plant/ Corporation Yard	OCC 2	1,693,000	105,000	PW	1,485,000	C	$103,000	E	
Initial Facility	OCC 3	21,499,000	869,000	PW	18,282,000	C	2,348,000	E	
Academic Building I	OCC 4	21,648,000	291,000	P	18,107,000	WC	3,250,000	E	1,811
Total		55,033,000	1,757,000		47,575,000		5,701,000		
B. New Total		0	0		0		0		
Grand Total		$55,033,000	$1,757,000		$47,575,000		$5,701,000		

C = Construction E = Equipment P = Preliminary Plans W = Working Drawings

Source: Office of the Chancellor, The California State University.

$164,867,000 -- or $32,973 per FTE student. Upon expansion of the institution to 15,000 FTE, the average cost declines to $21,100 per FTE student. Display 8 on page 68 illustrates the capital outlay cost estimates for the San Marcos campus on a per FTE basis by size of campus. It provides a perspective of how much of the projected cost is incurred at each increment of student enrollment. By multiplying the approximate per student cost of $21,068 to the 25,000 FTE maximum capacity, the total cost for a new campus is $526,719,000.

To accommodate projected enrollment growth, the State University projects an annual capital outlay budget in 1989 dollars of $154,357,000 for the 15-year period 1990-2005, as shown in Display 9.

To figure the cost per student served by the State University, the same methodology used for the California Community Colleges was also applied here, with the results shown in Display 10.

DISPLAY 7 Projected Costs, State-Funded Capital Improvement Program, San Marcos Campus, (ENR 4665)

Full-Time Equivalent Enrollment	Capital Project	GSF	Total Project Cost
5,000	Academic Buildings	153,940	$ 21,938,000
	Lab Buildings	76,700	6,785,000
	Library	110,000	13,410,000
	Performing Arts	80,000	17,709,000
	Physical Education	66,000	8,225,000
	Playfields	N/A	1,500,000
	Physical Plant	12,000	1,432,000
	Infrastructure	N/A	20,335,000
	Total		$101,334,000
15,000	Academic Buildings	486,700	69,089,000
	Lab Buildings	242,800	52,489,000
	Library	90,000	11,019,000
	Physical Education	66,000	8,225,000
	Playfields	N/A	1,500,000
	Physical Plant	17,500	1,980,000
	Infrastructure	N/A	7,316,000
	Total		$ 151,618,000
25,000	Academic Buildings	536,700	76,241,000
	Lab Buildings	320,700	68,509,000
	Library	200,000	24,195,000
	Performing Arts	60,000	14,460,000
	Theater	50,000	12,089,000
	Athletes' Complex	50,000	6,289,000
	Public Safety	5,000	950,000
	Physical Plant	12,500	1,483,000
	Infrastructure	N/A	6,018,000
	Total		$210,234,000

Notes:

1. Additional funds for off-site utility fees may be necessary.
2. Future remodeling projects may be necessary.
3. Capital outlay funds for initial 2000 FTE center are not included.

Source: Office of the Chancellor, The California State University.

DISPLAY 8 Summary of Projected Costs, State-Funded Capital Improvement Program, California State University, San Marcos (ENR 4665, 1989)

Size of Campus per FTE	Project Cost (Cumulative)	Estimated Cost in Dollars per FTE
2,000	$63,533,000	$31,767
5,000	$164,867,000	$32,973
15,000	$316,485,000	$21,099
25,000	$526,719,000	$21,068

Note: Cost at 2,000 FTE is from the 1989-90 Capital Outlay Program (Display 6), plus $8,500,000 for library acquisitions. These cost estimates include all facilities projected for the campus. This broad definition of facilities costs goes beyond lecture/lab capacity and includes all facilities needs as the campus grows. Thus, the cost per FTE derived above relates the expansion of the entire campus to meet projected FTE growth.

Source: The California State University.

DISPLAY 9 Projected Capital Outlay Needs of the California State University, 1990-2005

New Campuses/Off-Campus Centers	$743,220,000
Existing Campuses	$1,572,135,000
Total	$ 2,315,355,000
Cost Per Year	$154,357,000

Source: California Postsecondary Education Commission.

DISPLAY 10 Capital Outlay Cost Estimates for Transition from an Off-Campus Center to a Full-Service California State University Campus, in 1988 Dollars

	Total FTE Served	Cost per Campus	Cost per Student
New Campus (Four Years of Operation)	5,000	$63,533,000	$12,707
Mature Campus (30 Years After Establishment)	367,500	$526,719,000	$1,433

Source: California Postsecondary Education Commission.

University of California

To estimate the costs associated with construction of new campuses, the University of California estimated the likely results of the Commission's study of space and utilization standards (1990b) to derive the average assignable square footage (ASF) required per student for different space categories, as well as the utilization rates required by space type.

Instructional and research space

Instructional and Research Space includes space related to those core programs that are assigned a program data classification structure code with the number *1.0*. These programs include biological sciences, agricultural sciences, mathematical sciences, engineering sciences, psychology, arts, letters, and foreign languages. A full listing of all the programs classified under Instructional and Research Space are shown in Display 11 on the opposite page. Instructional and Research Space also includes both standard and non-standard space. The Irvine campus of the University was used as the benchmark for determining the likely discipline distribution of instructional and research space for new campuses. The University was able to derive sufficient information from Irvine's experience to determine the distribution of assignable square footage for instructional and research space, by discipline, that would be appropriate to apply as the general space configuration for new campuses. This information was then merged with the projected mix of graduate and undergraduate students on new campuses to determine the estimated assignable square footage required for instructional and research space, by discipline. The estimated assignable square footage is discussed further in the methodology section of this report.

Non-standard space

Non-standard space is any room type that is not subjected to space utilization standards, e.g., greenhouses, eating facilities, student unions, and storage areas. To estimate needed non-standard space, the Berkeley campus was used as the base to derive estimates for academic support, administration, and physical education. These figures reflect Berkeley's 1988 enrollments of 28,524, and no adjustment has been made to scale space needs in

DISPLAY 11 Revised Restudy Standards for the Resource Requirements Study

Program Data Classification Structure Code	Instruction and Research Core Programs	Percent of Postsecondary Commission Restudy
1102	Biological Sciences	135
1103.1	Agricultural Sciences	115
1103.2	Agricultural Economics	95
1103.3	Agricultural Biological Science	115
1104	Math Sciences	95
1105	Computer Science	85
1106	Physical Sciences	130
1107.1	Engineering Sciences	85
1107.2	Chemical Engineering	100
1107.3	Agricultural Engineering	100
1108	Psychology	100
1109.1	General Social Sciences	95
1109.2	Anthropology	85
1109.3	Geography	85
1110.1	Visual Arts	120
1110.2	Performing Arts	100
1111	Letters	95
1112	Foreign Language	95
1114.1	Interdisciplinary Studies	100
1114.2	Environmental Studies	100
1201	Administration	100
1202	Education	95
1203	Environmental Design	100
1205	Law	100
1206	Social Welfare	100
1208	Journalism	100
1209	Library Sciences	85
	Classrooms	100

Source: University of California.

these categories to the 25,000 FTE enrollment limit set by the University for new campuses.

Estimating space cost by assignable square footage

In Spring 1987, the University established a committee of architects and engineers that conducted an internal cost study, based on historical experience, of construction costs in different space categories, by assignable square footage. The results of this study provide the basis for estimating costs per assignable square foot for each different space category. These estimates provide the initial construction costs estimates for development of new space, as shown in Display 12 on page 70.

Auxiliary enterprises

Auxiliary enterprises comprise self-supporting operations such as campus housing, parking, student centers, and athletics. Facilities for auxiliary enterprises typically are not State funded but instead are financed through the University's issuance of revenue bonds that are repaid from revenues generated by the programs themselves. The following list outlines the assumptions used to derive the cost estimates as well as the gross square footage required for auxiliary enterprises for new campuses.

1. The auxiliary enterprises have an assignable square footage of 2.8 million, or in other words, a gross square footage of 3.4 million with an 82 percent efficiency factor.
2. On-campus housing will be provided for 40 percent of total enrollment, based on recent and planned Irvine campus experience.
3. Faculty rental housing will be provided for 10 percent of new faculty hired. This is based on recent and planned Irvine campus experience.
4. Surface parking will be provided for 40 percent of total campus population. This is based on recent and planned Irvine campus experience.
5. A student center will be allocated 10 gross square feet per student. This is based on Berkeley and UCLA's average.
6. Sports and recreation facilities will be allocated nine gross square feet per student, based on the average of Berkeley and UCLA.

DISPLAY 12 Cost Methodology for New Construction, University of California

	Building Construction Cost/OGSF	Efficiency Factor	Factor for Site/ Utilities	Overhead	Equipment Cost/ASF	PWCE Cost/ASF
A. Instruction and Research Capacity Space						
I. Biological Science	$180	.59	8%	20%	$50	$445
II. Physical Science	155	.62	8	20	60	384
III. Engineering	140	.62	8	20	60	353
IV. Office Plus	130	.65	8	20	20	279
V. Office	120	.65	8	20	20	259
B. Academic Support Space						
Libraries	130	.71	8	20	10	247
Museums, Galleries, Theaters	170	.65	8	20	10	349
Instructional Research Centers, Self- Instructional Labs, Academic Computing	140	.62	8	20	75	368
Vivaria	250	.57	8	20	50	618
Academic Administration	120	.65	8	20	20	259
Greenhouses and Davis Field Buildings	90	.95	8	20	5	128
C. Other Academic Space						
Physical Education	110	.70	8	20	8	214
D. Entrepreneurial Research Space						
Wet Labs	180	.59	8	20	50	445
Dry Labs	140	.62	8	20	60	353
Offices	120	.65	8	20	20	259
E. Administrative Support Space (Including Student Services and Administrative Computing)	120	.65	8	20	20	259
F. Public Service Space	120	.65	8	20	20	259

Source: University of California.

7. Other enterprises included are: (a) student activities, one gross square foot per student; (b) campus food services, one-half gross square foot per campus population member, (c) bikeways, $25 per campus population member, and (d) child care, $1 GSF per campus population member. These are based on size and cost of similar buildings at existing University campuses.

8. Renovation costs will be allocated at $74.50 per gross square footage, including additions, based on current experience. Surface parking is excluded.

Core campus assumptions used to project the cost of a new University campus are listed in Display 13 on the opposite page.

DISPLAY 13 Core Campus Assumptions

For the six years prior to opening day for the first undergraduate class and the seven years after, facilities identical to those presented in the materials for the October 1988 Regents' presentation. (See Display 14 on pages 72-74.)

Cost factors as used in the October 1988 Regents' presentation. Full funding of operation and maintenance of plant. (See Display 15 on page 75.)

The total core campus assignable square footage (ASF) is 3.6 million or 6 million of gross square footage (GSF), with a 60 percent efficiency factor.

Instructional and Research space standards revised as used in the October 1988 Regents' presentation; revisions were based on experience with recent projects in anticipation that CPEC's current study will yield results close to that experience. (Display 11 on page 69 recognizes the need for adjustment of the old 1955 *Restudy* ASF standards to the new ASF standards related to core program space.)

UC Irvine's current general campus discipline distribution is used as a base and no health sciences programs or hospitals are included.

Organized research space allocation is equal to 15 percent of total space (the average amount at present predicted for existing campuses).

Other space is in proportion to a mature campus's space (Berkeley example):

a. Academic support space equal to 18 percent of total space.

b. Administrative space equal to 11 percent of total space.

c. Physical education space equal to 3 percent of total space.

Program-related renovation is assigned a 1 percent renovation rate annually after the first five years.

Initial automation equipment needs as estimated for the October 1988 Regents' presentation, adjusted to reflect an enrollment of 25,000.

Equipment automation is assigned a 10 percent renovation cost, annually, after the first five years.

Source: University of California.

Methodology and assumptions

The University of California capital outlay estimates are based on general, changeable assumptions and are the best estimates available now. These estimates are expressed in 1990 dollars.

Several variables will significantly impact the ultimate capital costs for construction of new campuses. These include:

1. The campus's discipline distribution and student-faculty ratio;
2. The growth rate and the purchases or donations of acquired facilities;
3. The extent to which the State keeps renovation costs low by fully funding operation and maintenance of plant;
4. The need for programmatic renovation, especially in a competitive faculty recruitment environment; and
5. Variation in life cycles of different kinds of buildings, changes in code requirements, and unanticipated technological change.

These estimates do not reflect expectations about any individual funding source; they are estimates of need. However, it is anticipated that construction of all auxiliary enterprise space will be financed with external loans and be repaid from revenues and mandatory student fees (e.g., student center fee, recreational fee, registration fee).

The University plans to provide faculty for sale housing to 40 percent of the new faculty hired, as assumed in the October 1988 Regents' presentation. However, cost estimates are not provided here because the homes will be financed by private developers (on land leased from the University) and then sold to faculty.

The University based its methodology on what has been done in the past and what the campuses are doing in the present. It is not possible at this preliminary stage of planning to discern the ultimate accuracy of its projections since they are related to historical experiences. Yet, one cannot necessarily predict all the costs associated with innovation and ways that new campuses will need to innovate and/or renovate to adapt to future changes. For example, historically the University has mainly planned its campuses to exist in pastoral environ-

DISPLAY 14 *Estimated Annual Capital Costs for a Tenth University of California Campus (New Construction Only), in Thousands of Dollars*

Year of Occupancy	Capital Project	X-8	X-7	X-6	X-5	X-4	X-3	X-2	X-1	X	X+1	X+2	X+3	X+4	X+5	X+6
	Master Plan	750	750	500												
X-4	Interim Office 1			pw 382	ce 4,798											
X-3	Interim Research 1			pw 648	c 7,452	e 1,500										
X-2	Interim Office 2					pw 191	ce 2,399									
X-1	Interim Research 2					pw 316	c 3,634	e 500								
	Corp. Yard Admin. Support						pw 382	ce 4,798								
	Computing Facility						pw 234	ce 3,446								
	Utilities and Site Development					500	6,500	500	6,500	250	2,750			250	2,750	
X	Natural Science 1 (wet lab)					p 1,383	w 1,778	c 36,340	e 5,000							
	Humanities /Social Science 1					p 418	l 538	c 10,994	e 1,000							
	Library 1 (w/10,000) ASF-administrative)					p 581	w 747	c 15,263	e 700							
	Library and Administrative - Computing Costs						126	120	570	1,020	1,029	940	940	940	940	
	PE Facilities						pw 330	c 3,790	e 160							
	Student Health Services							pw 158	ce 2,353							
	Classroom 1							pw 414	ce 5,166							

(continued)

DISPLAY 14 (continued)

Year of Occupancy	Capital Project	X-8	X-7	X-6	X-5	X-4	X-3	X-2	X-1	X	X+1	X+2	X+3	X+4	X+5	X+6
X+1	Student Services							pw 622	pw 287	ce 3,598						
	Arts 1							pw 542	c 7,148	e 600						
	Theater/ Museum Galleries								c 6,238	e 200						
X+2	Gymnasium								pw 494	c 5,686	e 240					
	EH&S Facility								pw 130	c 1,490	e 300					
X+3	Engineer/ Physics CS (dry lab)								p 1,231	w 1,582	c 32,347	e 7,200				
X+4	Natural Science Alterations										pw 643	c 7,397	e 2,000			
	ORU, Office/Lab										pw 648	c 7,452	e 1,500			
	Classroom 2											pw 414	ce 5,166			
X+5	Administration Building										p 418	w 538	c 10,994	e 1,000		
	Humanities/ Social Science 2											pw 414	c 4,766	e 400		
	Computing Facility/ Instructional Development												pw 234	ce 3,446		
x+6	Natural Science 2											p 899	w 1,155	c 23,621	e 3,250	
	Visual Arts 2												pw 414	c 4,766	e 400	
	Library 2												p 415	w 533	c 10,902	e 500
		750	750	1,530	12,250	4,889	16,667	77,486	36,976	14,426	38,376	25,254	27,584	34,955	18,242	500

Notes: This table does not display costs associated with land acquisition.

The costs displayed probably underestimate the full cost of the future campus because:

(continued)

DISPLAY 14 (concluded)

(a) The equipment costs reflect the cost of equipping a building on an existing campus. On an existing campus, when the faculty occupy a new building, they often bring some supplies and equal practice on a new campus, however, new faculty would bring little or no supplies or equipment with them.

(b) We have assumed minimal renovations. In practice, it is likely that the interim building, as well as some of the earlier building, will be renovated in the first seven years after opening.

(c) We have estimated the sites and utility development costs using historical experience at Irvine, San Diego and Santa Cruz. If the campus is located away from the ocean, then these costs cooling/heating-plant needs.

Estimates are based on UC Irvine's 1987-88 discipline mix, plus an additional research facility per assumptions.

Cost factors used were those developed during 1987 cost estimates, except for library automation and administrative computing (per Dennis Smith and Richard West, respectively).

Estimates assume first permanent buildings will be occupied in year X.

Analysis assumes interim facilities will be constructed in ways that will make them useful for academic and administrative needs for 10 to 15 years.

Inflation is assumed to be zero.

Source: Office of the President, University of California

ments. In other words, its buildings are configured in a "spread out" or garden-like setting. However, if a new campus needs to be located in a densely congested metropolitan area, then the future may dictate that the University revise its thinking by orientating its building plans of the new campus vertically, where space is limited. Estimating costs for this very drastic change in traditional campus configuration cannot be predicated on historical experience, hence requiring innovative planning and different cost estimation approaches.

There is some concern over the University's assumption that its buildings have a life cycle of only 30 years, whereas the State University and the community colleges assume a building life cycle of 50 years. This issue warrants further discussion and needs to be resolved as the segments move forward with more detailed planning for expansion.

Estimated start-up costs for construction of new campuses

The University estimates start-up costs for a new campus to be approximately $209,221,140. This figure assumes an enrollment of 3,520 full-time-equivalent students as the initial complement of undergraduates. This results in a start-up cost for the initial facilities of $59,438 per full-time-equivalent student. Display 16 on page 76 lists the estimated capital outlay expenses per cost category to construct a new campus. Display 17 provides the assumptions applied in the calculations to project the cost of a new campus. The start up costs includes all initial buildings (core campus facilities and auxiliary enterprises), infrastructure, and automation that would need to be constructed through the opening year. The start up planning and environmental impact report (EIR) costs are based on recent experience.

Estimated build-out costs for construction of a new campus

The total estimated cost for build-out of a new UC campus is approximately $2.44 billion, assuming an ultimate size of 25,000 full-time-equivalent students and development for six years before opening day and 30 years after. These estimates include expenses for projects typically financed with non-state funds, such as auxiliary enterprises, which amount to $792 million of total costs. The construction cost per full-time-equivalent student is illustrated in Display 18 on page 77.

The University's capital outlay cost estimates for building out an existing campus to maximum capacity are represented in Display 19. That display includes also includes all start-up costs listed in Display 16.

DISPLAY 15 *Estimated Additional General Fund and Student Fee-Funded Annual Operating Needs for a Tenth University of California Campus with 7,000 Students, in Thousands of Dollars (Opening of the Undergraduate Program Would Occur in Year X)*

Additional Operating Needs	X-4	X-3	X-2	X-1	X	X+1	X+2	X+3	X+4	X+5	X+6	X+7
Instruction and Research and Instructional Support Costs	$0	$2,145	$2,145	$2,682	$2,690	$3,280	$3,280	$3,188	$3,118	$3,104	$4,152	$4,153
Organized Research	0	0	0	894	894	894	0	0	0	0	0	0
Libraries: Staff	1,592	16	16	16	2,933	282	282	282	368	282	282	452
Books and Binding	1,147	0	0	0	1,912	0	0	0	61	0	0	122
Instructional Use of Computers	0	14	14	14	156	169	169	169	169	169	169	169
Merits and Related Benefits	0	97	142	187	251	410	507	604	710	813	916	1,041
Operation and Maintenance of Plant	258	322	129	387	3,596	838	451	1,547	1,095	1,031	1,096	645
Institutional Support	0	595	595	740	745	954	949	922	954	933	1,329	1,335
Subtotal Additional Annual General Fund Operating Needs	2,997	3,189	3,041	4,920	13,177	6,827	5,638	6,712	6,475	6,332	7,944	7,917
Student Services	0	72	138	630	1,015	946	946	946	946	946	946	947
Student Aid	0	22	22	22	381	384	384	384	384	384	384	384
Subtotal Student Fee Funded Needs	0	94	160	652	1,396	1,330	1,330	1,330	1,330	1,330	1,330	1,331
Total Additional Annual Operating Needs	2,997	3,283	3,201	5,572	14,573	8,157	6,968	8,042	7,805	7,662	9,274	9,248
Total Budget (Including Base)	$2,997	$6,280	$9,481	$15,053	$29,626	$37,783	$44,751	$52,793	$60,598	68,260	$77,534	$86,782

Notes: Costs reflect current budgetary formulas or current experience to the greatest extent possible. Operation and maintenance of plant figures are based on new standards. Organized research costs are based on the budget of a similarly sized unit at Berkeley.

Auxiliary enterprises are assumed to self-supporting.

These figures do not include costs for faculty recruitment, which are estimated to be approximately $1,000 per FTE, nor do they include operating expenses related to preliminary planning, site selection, land acquisition, environmental impact assessments, or additional mitigation efforts that may be necessary.

Inflation is assumed to be zero. Faculty and staff salaries are assumed to increase at the level of inflation except for merit.

All costs are expressed in 1988 dollars.

Source: Office of the President, University of California

California Postsecondary Education Commission

The Commission's methodological approach to estimating the capital outlay costs of construction of new University of California and California State University campuses was based upon historical capital outlay data for these segments. The historical capital outlay data was obtained from the Governor's Capital Outlay Budgets, using the actual figures for each respective year with the exception of 1988-89 (estimated) and 1989-1990 (proposed).

In consultation with the four-year segments, the Commission selected appropriate sample campuses that would be generally comparable to likely configuration of future campuses. The representative

DISPLAY 16 University of California Start-Up Costs Estimates (ENR=4828, 1990)

Planning/Environment Impact Report	$ 3,193,826
Instruction and Research	107,877,854
Other	49,298,830
Infrastructure and Automation	17,125,294
Auxiliary Enterprises	31,725,336
Total	$209,221,140

Source: University of California.

DISPLAY 17 University of California Assumptions Used in Calculating Cost Estimates for New Campuses

No inflation, all estimates in 1990 dollars (ENR 4828).

No costs for land or off-site infrastructure.

No assumptions about location, although labor costs vary considerably from one location to another.

An ultimate campus size of 25,000 FTE students.

A student distribution of 20 percent graduate, 80 percent undergraduate.

A straight-line growth projection of 850 students per year.

Ultimate build-out achieved in 30 years from opening day.

A 30-year life cycle for all buildings.

Use of the current student-faculty ratio (17.61:1), 1,420 faculty.

Use of UC Santa Barbara's current ratio of students to non-academic staff (3.42:1) because Santa Barbara has no health sciences programs, 7,310 staff.

(continued)

DISPLAY 17 (continued)

No changes in current code requirements.

No renovation in the first five years; age-related renovation of 4 percent of total ASF annually thereafter.

Infrastructure renovation costs of 5 percent annually after installation.

Initial infrastructure costs at the average of Irvine's, San Diego's, and Santa Cruz's, adjusted by ENR for inflation and increased to reflect an enrollment capacity of 25,000.

Source: University of California.

DISPLAY 18 University of California Capital Outlay Cost Estimates for Construction and Build-Out of a New Campus (1988 Dollars)

	Total FTE Served	Cost per Campus	Cost per Student
New Campus*	8,800	$209,211,140	$23,774
Build-Out Campus**	390,300	$2,445,021,304	$6,264

* Four years after opening.

** Thirty years after opening.

Source: California Postsecondary Education Commission.

DISPLAY 19 University of California Build-Out Cost Estimates (ENR=4828, 1990)

Planning/Environmental Impact Report	$ 3,193,826
Instruction and Research	833,357,653
Other	673,919,242
Infrastructure and Automation	142,157,080
Auxiliary Enterprises	792,393,504
Total	$2,445,021,304

Source: University of California.

campuses were selected because they were established relatively recently, and their size of program offerings, and physical configurations were generally reflective of likely campuses that will be built in the future. The capital outlay budget for each sample campus began with the campus's date of establishment. The data for this analysis included every project listed in the capital outlay budget for the sample campuses where monies were appropriated, except for health sciences, agriculture field stations, and other "miscellaneous" items not typical for development of a campus, such as the San Joaquin Fresh Water Marsh. All renovation, alteration, conversion, and modification costs that were listed in the budget were removed. Once these costs were removed, each segments' renovation and infrastructure assumptions were incorporated and applied to the projects included in the sample campuses' capital outlay profile to obtain the total cost estimate of building a new campus.

For the University of California, a renovation cost factor of 5 percent was applied a year after installation of the infrastructure and then added annually thereafter. Instruction and research facilities and auxiliary enterprises were assumed to have a 4 percent renovation cost annually from the first five years after installation. The same procedure was applied for the California State University, except that a renovation cost of 2 percent was applied for all capital stock beginning the year after installation.

Once the base capital outlay costs were adjusted with the appropriate renovation assumptions, an inflation factor was applied to the total sum of capital outlay expenditures to bring all expenditures into 1989 dollars. The inflation factors were provided by the State Department of Finance.

The methodologies utilized by the segments were driven largely by projecting likely future capital outlay costs from current costs, whereas that used by the Commission involved calculating historic costs and adjusting them into current dollars. Despite the difference in methodology, the segments' and Commission's estimates are relatively close, lending a degree of confidence among all parties about the general reliability of the projections.

As noted earlier, the Commission has been unable to apply its own costing model to community college capital outlay construction because of accounting and reporting differences among community college districts prior to 1977 that made financial comparisons among appropriate community college campuses infeasible. Nonetheless, extensive review by Commission staff of the Chancellor's Office cost estimates has convinced the Commission that those preliminary estimates are reasonable and appropriate for the purposes of this statewide planning project. The results of the Commission's capital outlay study, compared to the estimates of the segments, are shown in Display 20 on page 78.

References

California Postsecondary Education Commission. *A Capacity for Learning: Revising Space and Utilization Standards for California Public Higher Education.* Commission Report 90-3. Sacramento: The Commission, January 1990.

McIntyre, Charles. R&A Memo No. 89-73 to Kirk Knutsen, December 27, 1989.

DISPLAY 20 Capital Outlay Cost Estimates for Construction of New Campuses in Each of California's Public Segments of Higher Education, in 1988 Dollars

	Size of Campus (FTE/ADA)*	Cost per Campus
University of California		
Start-Up (New Campus)	3,520	$209,221,140
Total Cost at Build-Out (UC estimate)	25,000	$2,445,021,304
Total Cost at Build-Out (CPEC estimate)	25,000	$2,329,192,860
The California State University		
Start-Up (Off-Campus Center)	2,000	$63,533,000
Total Cost at Build-Out (CSU estimate)	25,000	$526,719,000
Total Cost at Build-Out (CPEC estimate)	25,000	$597,827,598
California Community Colleges		
Start-Up (Off-Campus Center)**	1,150	$12,198,050
Total Cost at Build-Out	8,000	$100,600,000

* Average daily attendance (ADA) is used for the community colleges, full-time-equivalent enrollment (FTE) for the University and the State University.

** Community colleges start-up estimates exclude land acquisition costs which varies from $0 to $400,000 per acre.

Note: The Commission cost estimates are based on historic actuals for representative campuses, adjusted for inflation and current estimated space deficiencies. This includes funding for projects traditionally paid for with non-state funds. Estimates assume a 30-year effective life for University facilities, 50 years for State University facilities, and 50 years for community colleges facilities. University costs and Commission estimates of University costs include auxiliary enterprises not usually financed through State funds.

Source: California Postsecondary Education Commission.

ATTACHMENT A

California Community Colleges Board of Governors' Policy on Long-Range Capital Outlay Planning

NOTE: This material was originally produced by the Chancellor's Office of the California Community Colleges and has been adapted with their permission for use in this background paper.

Background

The Board's 1989-90 Basic Agenda recognizes the need to "accommodate future growth," noting that "the increasing demand for facilities and operating funds . . . calls for prudent management of limited resources," and that "plans for growth should be coordinated with the other segments of higher education."

California's population is expected to become far more culturally diverse and to grow one-fourth by 2005, giving rise to an enrollment increase in community colleges of at least 400,000 students -- the equivalent of 40 average-size colleges of 10,000 students each. While new campuses, facilities, and delivery techniques will be required, many existing campuses are incomplete, existing facilities are aging and becoming obsolete, and equipment is increasingly in need of repair and replacement.

To help address these issues, Chancellor's Office staff are examining enrollment projections under alternative assumptions about future conditions, and are developing a planning model that will estimate capital outlay needs for the Community College system to 2005. The details of this work and related planning efforts by the California Postsecondary Education Commission (CPEC), the University of California (UC), and the California State University (CSU) are reviewed in this item.

Analysis

Enrollment projections are basic to capital outlay planning. Current projections used for long-range planning in UC, CSU, and the Community Colleges are based on widely differing methods and assumptions, the combination of which produces different results.

UC projects its undergraduate and graduate enrollments to increase by 34 percent and 80 percent, respectively, by 2005. These increases, together with enrollment ceilings at existing campuses, have lead to UC's recent request for three new campuses, to open in 1998, 1999, and 2000.

CSU's long-range plans are predicated upon providing equal access to historically underrepresented groups. Taken literally, this would produce a two-thirds increase in CSU's undergraduate enrollment by the year 2005, which has led to proposals for four to six new campuses and centers (two of which have been approved).

Enrollment projections for the Community Colleges are prepared by the Department of Finance (DOF), which uses projections of historic participation rates (enrollment divided by population) and applies them to expected future population. DOF's current projection of 400,000 more students by 2005 appears low because:

- Abnormal budget cuts between 1982 and 1984 artificially depressed historic and projected participation rates, and
- Population projections are proving to be too low. Chancellor's Office staff are examining DOF's projection method in order to develop valid alternatives.

Part of the anticipated increases in Community College enrollments can be met by building and remodeling facilities on existing campuses, extending outreach activities, and developing new techniques for the delivery of instruction and support services. The remainder of expected future enrollment increases will need to be accommodated at new centers (many of which will become full-fledged campuses) if the Board of Governors goals for quality education and equal access, particularly for historically underrepresented students, are to be realized.

Capital outlay for growth also must be balanced against other substantial needs: to maintain and upgrade existing facilities, to repair and replace equipment, and to provide a full complement of support facilities on certain campuses.

Funding for capital outlay in the Community Colleges, UC, and CSU currently is derived from the sale of revenue and general obligation bonds. Bonds authorized in 1986 and 1988 cover capital outlay expenditures through 1989-90. Legislation for another $900 million in higher education capital outlay bonds is pending and, if approved, will be put before California voters in June 1990, along with possibly another $13 billion in bonds for other purposes.

Current capital outlay planning procedures for the Community Colleges do not provide a picture of long-range needs or systemwide totals, nor do the current procedures make it possible to easily examine the impact of enrollment alternatives or policy changes. To address these problems, Chancellor's Office staff have begun work on a simulation model, utilizing microcomputer spreadsheet technology that compares existing facilities to projections of future enrollment and estimates needed capital outlay to the year 2005.

The model produces estimates by type of outlay (construction, remodeling, maintenance, etc.) and by type of facility (lecture, laboratory, office, etc.). Twenty-nine different data elements about existing and future enrollments and existing facilities for each district are entered into the model. This information is then processed by the model, using space and utilization standards and 16 capital outlay planning rules and assumptions developed for this purpose.

An initial test of the planning model indicates that it can be helpful in projecting long-range capital outlay needs for the Community Colleges system. Before further work is undertaken, however, minor technical adjustments are needed and consideration must be given to changing certain of the model's parameters. Major issues to be addressed include: alternative enrollment projections; guidelines for planning new campuses and centers; space and utilization standards for lecture, office, and AV/TV/library facilities; costs of completing campuses; building maintenance; remodeling needs; and physical access and safety conditions.

Staff will report on further progress in long-range capital outlay planning at upcoming meetings of the Board.

Long-range capital outlay planning

Introduction

The Board's proposed 1989-90 Basic Agenda recommends six major objectives, prominent among which is an effort to "Accommodate Growth," noting that:

> The rapidly increasing demand for facilities and operating funds to accommodate growing enrollments calls for wise and prudent management of limited resources.

In addition, the Basic Agenda calls for a "long-range plan for capital construction in community colleges," and for consideration of

> . . . both the growth of the state's changing student population and the need for facilities to accommodate that growth when developing the system's budget. Plans for growth should be coordinated with the other segments of higher education.

Community College growth will be stimulated not only by the state's future demography, but also by the Board's goals to: (a) improve the access and retention of historically underrepresented students, and (b) play a more significant role in strengthening California's economic development. Achievement of these goals is essential if the Community Colleges are to help prepare Californians to participate in an ever-more complex and multicultural society.

Related recommendations from the 1988-89 Basic Agenda call for developing plans for faculty replacement -- emphasizing the need for gains in staff diversity -- and for more predictable funding and advanced planning.

These and other recommendations on long-range planning are timely for two major reasons. First, California continues to grow; total state population is expected to increase by over six million, or one-fourth, by the year 2005. Current estimates of future community college enrollment show the system growing by at least 400,000 students over the next 16 years -- the equivalent of 40 average-size colleges of 10,000 students each. Emerging trends suggest that students will tend to need more instruction in basic skills and English and Second Language. While, at the same time, their learning will need to be more sophisticated because of society's increasing technological and cultural complexity. New educational facilities and new and improved instructional delivery techniques will be needed, but existing facilities are aging and the amount of deferred maintenance is increasing on nearly every campus. Effective planning for the facilities and staff needed to meet future needs is essential in this complex and changing environment.

A second reason for the Board to undertake long-range planning is the call for that effort in a number of recent studies and legislative measures. The Commission for the Review of the Master Plan, in its final 1987 report, *The Master Plan Renewed*, observed that, "Continuing, systematic long-range planning is essential to the efficient and orderly growth of postsecondary education in California," and recommended that the California Postsecondary Education Commission (CPEC) assume several responsibilities for long-range planning, including the development of common definitions, assumptions, and projections for use by the segments. The Review Commission also recommended that, "The Community Colleges be expanded as necessary to accommodate growth in demand for lower-division academic and vocational instruction for credit . . ."

The Joint Legislative Committee for the Review of the Master Plan proposed a number of similar recommendations on long-range planning in its final report, *California Faces . . . California's Future*. This report requests the segments, in consultation with CPEC, to prepare expansion plans to the year 2005. The report goes further to suggest a number of planning guidelines to be used in this effort.

Supplemental Language in the 1988 Budget Act directs CPEC to develop recommendations for the Governor and Legislature on policies about new facilities to 2005, including (a) new versus expanded sites, (b) new delivery techniques, (c) space and utilization standards, (d) year-round operation, and (e) regional approaches. A report is to be issued by CPEC in December 1989 as a basis for a systemwide plan to be submitted to CPEC, the Department of Finance, and the Joint Legislative Budget Committee by December 1990.

In addition, Supplemental Language in the 1989 Budget Act proposes that each segment submit a comprehensive five-year capital outlay plan that includes at least the following:

- Campus enrollment projections through 1995;
- Proposed projects in each of the next five years, with programmatic and capacity justifications;
- Cost estimates for each proposed project; and
- The relative priority of projects.

These plans are to be submitted by September 1, 1989, and updated annually.

For the Community Colleges, there is the additional requirement in AB 1725 (Chapter 973), Statutes of 1988) that the Board of Governors "review and approve comprehensive plans . . . submitted by the governing board of each community college district." The statute is silent, however, as to when or how this is to be done.

At present, Chancellor's Office staff are examining enrollment projections under alternative assumptions about future conditions, and developing a planning model that will project planning efforts by the University of California (UC) and California State University (CSU) are examined below.

Enrollment projections

Enrollment projections are basic to capital outlay planning. For operating budgets, such projections extend no more than two years into the future. For capital planning purposes, ten-year projections are the norm. However, longer (15- and 20-year) projections appear necessary for the orderly planning of new campuses and centers.

Current enrollment projections used for long-range planning by the three segments are based on widely differing methodologies and assumptions, the combination of which produces widely differing results, as show in Table 1. These differences are reviewed below.

TABLE 1 *Projected Enrollment Growth in California Public Education, 1988-2005*

	1988	2005	Percentage Growth
California Community Colleges Total	1,333,191	1,873,210	40.5%
California State University Undergraduates	284,929	465,500	63.4
California State University Graduate and Postbaccalaureate	70,177	75,800	8.0
California State University Total	355,106	541,300	52.4
University of California Undergraduates	118,513	161,800	36.5
University of California Graduate and Professional	26,419	47,300	79.0
University of California Health Sciences	11,804	12,250	3.8
University of California Total	156,736	221,350	41.2
K-12 Total	4,512,963	6,279,403	39.1
Total Growth in Public Postsecondary Education	1,845,033	2,635,860	42.8
Total Growth in Public Education	6,357,996	8,915,263	40.2

Source: Projections for the California Community Colleges and K-12 from the Demographic Research Unit, State Department of Finance. University of California projections from the University, and California State University projections from the State University. Reproduced from Display 7 on page 17 of *Higher Education at the Crossroads* (1990).

University of California

Using Department of Finance estimates of high school graduates, the UC President's Office projects long-term undergraduate enrollments for each campus, based upon historic enrollment rates. These projections are then reconciled with estimates prepared by each campus using factors unique, in many cases, to their individual circumstances.

Graduate enrollments at UC are planned and managed using a set of principles that include: (a) the future need for research and for individuals with advanced training, (b) the job market, (c) maintaining a balance between graduate and undergraduate activity and between domestic and foreign students, (d) affirmative action objectives, and (e) selectivity and program quality. Graduate enrollment projections in a recent UC study were heavily influenced by three factors: the future market for holders of advanced degrees (emphasizing the need for faculty), institutional balance, and an expansion of professional education.

Current long-range projections for UC campuses through the year 2005 explicitly assume that:

(a) The Riverside campus will not grow beyond 15,000 enrollment; and

(b) The ratio of graduate to undergraduate enrollments will increase from .19 to .23 throughout the system.

UC projects an increase of 40,000 undergraduate students by 2005, which roughly reflects the expected one-third increase in the number of high school graduates. Graduate enrollments, however, are projected to increase by about 20,000, or 80 percent, during this same period. These increases, along with enrollment ceilings at existing campuses, are used as arguments to support the University's current request for three new general campuses to be occupied in 1998, 1999, and 2000, at sites that are as yet undetermined. Funds have been appropriated for UC to study the environmental impact of growth at existing campuses and for the selection of new campus sites.

California State University

A five-year estimate of systemwide enrollment by the Office of the Chancellor initiates CSU's enrollment projection process. This estimate is based on a model that uses historic and projected enrollment rates of first-time students from specific age and gender categories in the state's adult population. Estimates of future population are provided by the Department of Finance. Continuation rates for the same age and gender categories of enrollment are then applied to develop an estimate of total enrollment for the system. From this estimate, projected enrollments are allocated among the 19 campuses of the system, then reviewed and negotiated within the overall system total. Agreed-upon one-and five-year projections become CSU policy for formulating operating and capital budgets.

For longer-range planning, CSU has assumed that "the participation rates of Blacks and Hispanics (now 3.5 and 3.0, respectively, of each 100 21-year old adults) will increase to equal that of whites (7 to 100) by the year 2005."

In contrast to UC, enrollment assumptions for CSU result in a relatively minor change in graduate enrollments (7 percent increase), but a major increase in undergraduate enrollments of 180,000 students (66 percent) by the year 2005. This projection is substantially greater than previous estimates (by about 100,000 students) and results from CSU's stated objective of providing equal access to historically underrepresented students.

CSU is proposing four to six new campuses and centers to meet future enrollment needs. One, at San Marcos in San Diego County, is proposed for official designation as the system's twentieth campus. An off-campus center in Contra Costa county has been approved and initial capital outlay funds appropriated. CSU is currently negotiating for a third site, for a permanent off-campus center in Ventura county.

California Community Colleges

By statute, long-term enrollment projections for capital outlay planning in the California Community Colleges are prepared by the Department of Finance (DOF). In the DOF model, projections are formulated by applying expected "participation rates" (enrollment divided by population) to projections of future population groups, categorized according to age and gender. The expected participation rates are based on past trends, input from local districts, and a qualitative assessment of each district's situation by DOF staff. These past trends embody not only enrollment demand, but also budget provisions that affect the colleges' ability to enroll and teach students.

DOF's latest projections through 1997 are displayed in Figure 1 on page 84. If the changes in participation rates projected by DOF are extrapolated beyond 1997, as in the figure, community college enrollments would rise to nearly 1 76 million by the year 2005, an increase of about 400,000 students, or the equivalent of 40 average-size colleges of 10,000 students each.

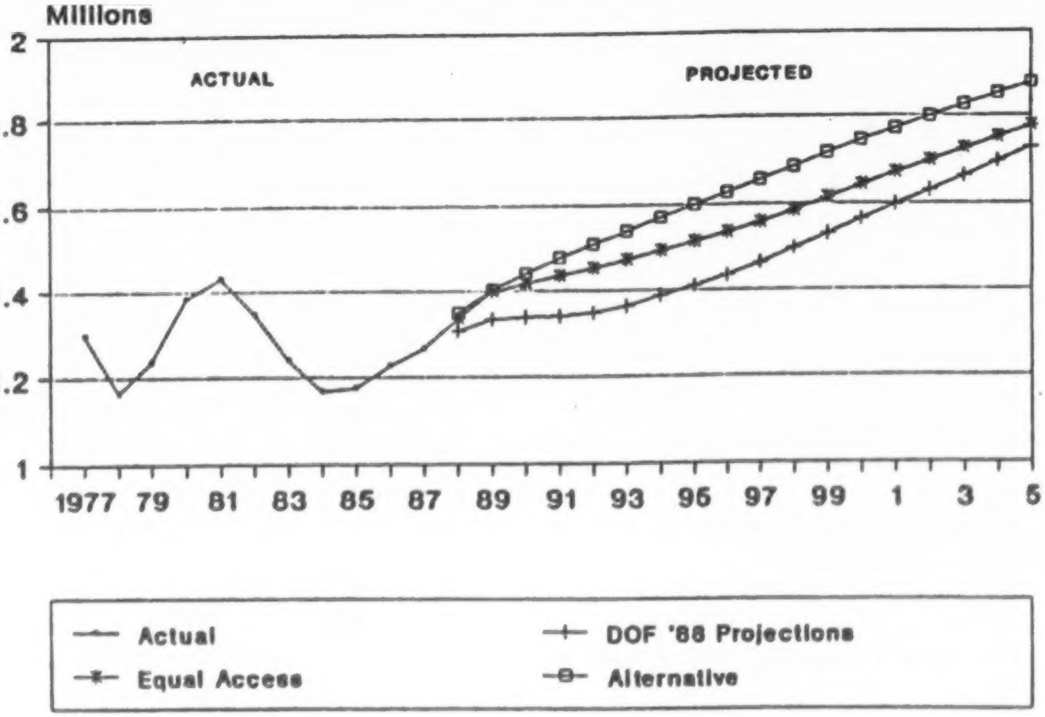
These enrollment projections appear to be low for two reasons. First, the projections embody the consequences of abnormally severe budget cuts experienced between 1982 and 1984, and thus implicitly assume that similar cuts will occur in the future. By contrast, community colleges have received normal funding provisions for cost-of-living and growth during the past four years and as a result, have experienced enrollment increases from 3 to 5 percent annually.

These rates of increase are substantially higher than those projected by the DOF for the next decade. DOF's projections are below even those allowable under the funding cap, where ADA growth is not to exceed the growth in adult population. For example, DOF projected a 3 percent increase in community college enrollment for fall 1988, when in fact, preliminary figures show that the increase may be as high as 4 or 5 percent. The passage of Proposition 98 last year and the possible passage of Senate Constitutional Amendment 1 in 1990 make it unlikely that colleges will again experience budget cuts of the 1982-84 magnitude.

Second, community college enrollment projections are derived from population projections ("Baseline 86"), also by DOF, which appear to be significantly understated. Under Baseline 86 estimates, California's population was expected to grow by just under 500,000 per year between 1985 and 1990, a yearly increase of about 1.8 percent. By contrast, more-recent DOF population estimates (Report 87 E-2, January 1987) indicate that California's population grew by 643,000 in 1986 and 662,000 in 1987, rates of 2.5 percent annually.

Appropriate consideration of the two factors of population and participation would likely result in Community College enrollment projections that are

FIGURE 1 *California Community College Enrollments, 1977-2005*



substantially higher than those of DOF. Such differences, when projected 10 or 15 years into the future, have major implications for community college capital outlay needs beyond the turn of the century.

Alternative methods of projecting enrollment need to be considered. One such alternative could be based on a gradual return to the participation rates the community colleges experienced prior to the abnormal budget cuts of 1982 to 1984. Another enrollment projection alternative could be based on a policy of equal access, where participation rates of Blacks and Hispanics were to increase by 1992 to correspond to those of whites. The results of using both alternative methods are displayed in the enrollment projections in Figure 1 and prove to be substantially higher than those of DOF.

Chancellor's Office staff are examining the DOF projection methodology to determine if budget changes and other external factors that are known to have an impact on enrollment (such as unemployment) can be isolated so that potentially valid alternative projections can be developed.

Funding

Until 1984, funding for higher education was provided by the Capital Outlay Fund for Public Higher Education (COFPHE). This fund was supported largely by Tidelands Oil Revenues, which are no longer available. UC, CSU, and the Community Colleges are now funded through general obligation and revenue bonds. General obligation bonds were authorized in 1986 for $400 million and in 1988 for $600 million. The Community Colleges share was $99 million and $143 million, respectively. Community colleges also receive funding from revenue bonds.

General obligation bonds must be approved by the voters and are typically a long-term instrument financed by the State's General Fund. Like other bonds, California's are rated according to the State's general fiscal health, its cash reserves, and its overall level of bonded indebtedness. California's bonds currently have the highest possible rating: AAA. (The debt service on voter-approved bonds is exempt from the State's appropriation [Gann] Limit).

Revenue bonds may be authorized in two ways. The Legislature may grant authority to an institution to issue revenue bonds for a specific project, or the Legislature may authorize the bonds for a specific purpose. These bonds, although backed by the State must be self-supporting, from a designated "revenue stream."

Revenue bonds have been used to fund high-technology projects. In addition, CSU and UC have both issued revenue bonds to support projects such as student centers, parking lots, dormitories, and athletic facilities -- paid for, in the case of student centers, by food service profits and increased student fees.

Community college capital outlay planning

Capital outlay planning for California's 107 community colleges is based on the annual submission of five-year plans and project proposals by the districts. These plans are reviewed by Chancellor's Office staff, relying largely on DOF enrollment projections, State-approved space and utilization standards, and priorities set by the Board of Governors. On the basis of this staff review, the Board develops a list of proposed projects for the immediate budget year and that list is entered into the executive and legislative budget processes. (While the first year is emphasized, review also is made of the second through fifth years of district plans.)

Districts also submit five-year plans for the funding of deferred maintenance. After review and approval, districts later submit detailed proposals for funded first-year projects and then revise and resubmit their five-year plans for the next cycle. Equipment replacement is supported by a separate ADA allocation and accommodated through the district's operating budget. Ongoing facility maintenance is supported by the general apportionment.

Long-range capital outlay planning model

Current capital outlay planning procedures do not provide a picture of long-term needs or regional and systemwide totals, nor do current procedures make it possible to easily examine the impact of enrollment alternatives and/or policy changes. To address these problems, Chancellor's Office staff are working on a simulation model, utilizing microcomputer spreadsheet technology that compares information on existing facilities with forecasts of enrollment and academic loads, and projects needed capital outlay to 2005.

The model produces estimates by type of:

- Outlay
  acquiring sites and developing new campuses
  constructing and equipping new facilities
  remodeling and altering existing facilities
  maintaining existing facilities
  leasing and renting off-campus facilities
  replacing equipment
- Facility
  lecture-rooms
  laboratories and shops
  audio-visual, radio/television, and library offices
  supporting spaces

Twenty-nine different data elements about existing and future enrollments and existing facilities for each district are entered into the model. (See Appendix A for a list of these elements.) This information is then processed, using space and utilization standards and a series of capital outlay planning rules and assumptions.

Space and utilization standards are stated in terms of the square feet of facilities that staff and students require for their activities. Standards are derived from policies on how many hours per week a room is to be used, how many stations in the room are to be occupied during that time, and the amount of floor space needed for each station. The standards for the California Community Colleges are set forth in law (Appendix B).

The 16 planning rules and assumptions used thus far in work on the model are listed in Appendix C. For the most part, these rules and assumptions represent an attempt to quantify existing policies and procedures for use in the model. In some cases, the rules are unwritten, but rigorously followed. In other cases, rules or assumptions may change periodically. Qualitative "rules of thumb" have been reduced to their approximate quantitative equivalent for use in the model. An illustration of this is the tentative "rule" in the model for proposing new campuses:

- New campuses (or centers slated to become campuses) are proposed when
  - (a) Average size of existing campus(es) in a district exceeds 600 Weekly Student Contact Hours (WSCH) per acre, and
  - (b) The service area(s) of existing campus(es) in a district exceeds:

Type of Service Area	Size of Service Area (in Square Miles)
Urban	100
Suburban	500
Rural	1,000

Districts plan new campuses for several reasons. Population growth may be taking place in a part of the district beyond a reasonable commuting distance to existing campuses. Or, an existing campus may not physically be able to accommodate additional students. In some cases, lack of parking space may constrain the expansion of an existing campus.

Part (a) of this planning rule is based on the current acreage and academic activity at the system's 107 colleges. The average community college in California enrolls 11,000 students on 150 acres. More (less) acreage and facilities can support more (fewer) students, although other factors may be more important, such as the regional location of programs, topography, and character of existing facilities.

Part (b) of this rule is based on the assumption that a commuting time of not more than 30 minutes -- including 25 minutes travel and 5 minutes to find parking -- to (and from) campus is reasonable. This rule of thumb is applied against expected commuting speeds in different areas to derive the approximate mile radius and square-mile area to be served by each campus. It is also assumed that the current proportion of instruction taught at off-campus outreach sites (about 1 in every 10 WSCH) will continue. Although this rule is not written down, the underlying concepts appear valid. The actual values in the rule should be reviewed further, and it may need to be extended to cover major centers that are not expected to become campuses. With these refinements, the model can be helpful in suggesting the need for new campuses within regions and across the state, even though the procedure for gaining approval of these sites is far more complex. Extensive criteria are used in the actual review of such proposals by both the Board of Governors and CPEC.

Preliminary results from the model

Three enrollment projections were examined in a first "test" of the model:

1. Using enrollment projections prepared by DOF in 1987 to estimate future capital outlays and comparing them with districts' actual five-year-plan requests for the period 1989-94.

   This projection provides for an assessment of the model's validity in relation to district requests.

2. Using enrollment projections prepared by DOF in 1988 to estimate future capital outlay needs.

   This variation uses the latest "official" enrollment projections and illustrates the impact that an additional year's actual enrollment experience has on the DOF projections and, consequently, on the need for capital outlay.

3. Using an "alternative" enrollment projection to estimate future capital outlays.

   This alternative assumes a return to the "more normal" participation rates (enrollment divided by population) that existed prior to the "abnormal" budget cuts and fee increases between 1982 and 1984. It illustrates the impact on capital outlay of changed assumptions about future participation and consequently, changed enrollment projections.

Major preliminary findings from running the model using these three enrollment projections are as follows:

1. Using DOF 1987 enrollment projections to compare with district requests for the five-year period, 1989-94, the model provided, as shown in Table 2 on the opposite page:

TABLE 2 *Comparison of District Five-Year Plan Requests and Planning Model Projections 1989-1994*

Type of Outlay	District Five-Year Plans (in millions)	Planning Model (in millions)
Acquire, develop sites	$31.1	$40.2
Construct, equip new	597.2*	377.6
Remodel existing	15.7*	98.1
Total Capital Outlay	$644.0	$515.9
(Per Year)	($128.8)	($103.2)
Deferred Maintenance	168.9	140.6
Lease/Rent Off-Campus	NA	4.6
Ongoing Maintenance	NA	378.6

Sources: District 1989-94 Five Year Plans and Chancellor's Office Long-Range Capital Outlay Planning Model.

* Five-Year Plan project descriptions do not allow for a precise distinction between these two kinds of projects; therefore, while the total of these figures is accurate, their individual levels may not be.

- Less overall funding:
  - $103 million per year in the model.
  - $129 million per year requested by districts.
- Less for new construction.
- More for remodeling.
- A similar amount for deferred maintenance.
- Probably more for AV/TV/library space:
  - Less for lecture space.
  - Less for office and supporting spaces.

2. Different enrollment projections substantially alter projected capital outlay (Table 3, page 88). Using the latest (1988) DOF projections, estimated capital outlay by the model averaged $121 million per year, rather than $103 million - the model's estimate from 1987 DOF projections.

   The amount estimated for building maintenance is large: $500 million over the next five years. Only with the highest "alternative" enrollment projection does the estimate of new capital construction exceed that of building maintenance.

3. Irrespective of the enrollment projection used:

- "Deferred" maintenance in the model is reduced initially, but begins to increase after 1997.
- In terms of total space, a number of districts are "overbuilt" (based on current space and utilization standards), but they are deficient in specific kinds of space, particularly:
  - Laboratory.
  - AV/TV/library.
- The model projects surprisingly little new space for:
  - Lecture rooms.
  - Office and other supporting facilities.

Further work

The first test of the model suggests that it can be a useful tool in projecting long-range capital outlay needs for the Community Colleges system. Before further work is undertaken, however, minor technical adjustments are needed and the model parameters that describe current policies and practices must be reviewed. Major issues are as follows:

- *Alternative enrollment projections:* DOF will issue a new set of long-term enrollment projections in

TABLE 3 Aggregate Capital Outlay Estimates, Using Three Different Enrollment Projections

	First Five Years		Total 17 Years		
Enrollment Projection	$(M)	New Campuses	$(M)	New Campuses	2005 Enrollment
Department of Finance 1987	$516	9	$1,576	17	1,613,883
Department of Finance 1988	607	10	1,798	22	1,649,075
Alternative	987	13	2,690	27	1,877,008

Source: Chancellor's Office Long-Range Outlay Planning Model.

October 1989, and CPEC will review these and other projections in its December 1989 report. Chancellor's Office staff are continuing to work on alternative projections that embody explicit and plausible assumptions.

- *Establishing new campuses:* The model's rule for establishing a new campus (see above) is based on the current workload at existing campuses, certain assumptions about reasonable commuting times, and the amount of instruction to be offered at outreach sites. These assumptions need to be reviewed, and it may be useful to expand the model to examine the need for new centers as well as for new campuses or colleges.
- *Space and utilization standards for lecture and office facilities:* College planners indicate that current space and utilization standards for lecture rooms and staff offices are too austere and need to be reviewed and changed. A CPEC study of practices in other states supports this view and should lead to recommended changes.
- *Standards for AV/TV/library:* The model projects far more new space for these instructional support facilities than districts are requesting. The space and utilizations standards for these areas should be reviewed.
- *Completing campuses:* Board policy is that after $20 million in capital outlay are funded for the system, at least $1 of every additional $5 in capital outlay is to be devoted to facilities that every campus needs to adequately support a comprehensive educational program; e.g., physical education facilities, performing arts theaters, child care centers, and cafeterias. While the model produces statewide estimates of the cost, provisions for completing campuses may need to be incorporated at the district or regional level. Also of concern is adequate provision and funding for parking.
- *Building maintenance:* The formula for estimating building maintenance needs further review, particularly to determine: (a) the appropriate assumption about average building life -- 50 years in the model's first test; and (b) the schedule for eliminating "deferred" maintenance.
- *Remodeling:* The literature provides virtually no direction as to specific rules for remodeling. The model's current formula is based on the assumption that two-thirds of an average building will need to be remodeled for changing curriculum and new methods of instructional delivery during its estimated 50 year life. This is arbitrary and could vary substantially by discipline. Review and possible revision of this rule is suggested.
- *Regional differences:* The model includes characteristics that allow for differences among various regions of the state. Aside from differences in construction costs and in assumptions about commuting times, however, the planning rules and space and utilization standards are common throughout the state. Consideration may need to be given to varying certain rules by region to account for the impact of weather on building maintenance or air conditioning needs, as well as for other factors.
- *Physical access and safety:* The Board has assigned highest priority to capital outlay expenditures for safety requirements, correction of hazardous conditions, and physical access for disabled persons. The model does not currently incorporate these priorities, and the need and means for their inclusion should be reviewed.

APPENDIX A
Capital Outlay Planning Model
District Data Entry

Data Elements

- Existing ASF of Lecture Space
- Existing ASF of Laboratory Space
- Existing ASF of Office Space
- Existing ASF of AV/TV/Library Space
- Existing ASF of Noncapacity Space

- Median Age of Buildings
- Outside Gross Square Feet of Buildings
- Value of Deferred Maintenance

- Ongoing Building Maintenance
- Ongoing Building Maintenance/Other

- Number of Colleges
- Square Miles per College (select value from Rule N)
- Campus Acres Owned
- District Square Miles
- Construction Multiplier

- 1982 Population (18 to 64)
- 1988 to 2010 Population (18-64)

- Department of Finance 10/87 Estimates
  - Total Enrollment, 1988 through 1996
  - Day-Credit Enrollment, 1988 through 1996

- Department of Finance 10/88 Estimates
  - Total Enrollment, 1988 through 1997
  - Day-Credit Enrollment 1988 through 1997

- Department of Finance 10/87 Projection of District WSCH, 1988 through 1996
- Department of Finance 10/88 Projection of District WSCH, 1988 through 1997

- Alternative Enrollment Projection #1 (calculates automatically)
- Instructional Staff FTE

- Total WSCH Offered on Campus
  - Total WSCH Offered on Campus in Lecture Space
  - Total WSCH Offered on Campus in Laboratory Space

- Off-Campus Lease Cost per Foot
- Campus Site Acquisition Cost (select value from Rule P)

APPENDIX B
Capital Outlay Planning Model
Space and Utilization Standards

Facility "capacities" -- i.e., what level of activity each should house -- are calculated by applying space and utilization standards to the space available:

assignable square feet (ASF) of facility = capacity of facility asf/workload measure

where, workload measures include:
weekly student contact hours (WSCH)
FTE instructional faculty (FTEIF)
day graded (credit) enrollment (DGE)

Facility spaces for which capacity is measured include:

Classroom lecture:	0.429 ASF/WSCH 15 feet per lecture station, 66 percent of stations occupied, 53 hours per week	
Classroom laboratory:	*1.50 to 8.50 ASF/WSCH (depending on discipline) * feet per lab station, 80 percent of stations occupied 27.5 hours per week	
Offices:	140 asf/fteif	< 35,000 WSCH/COLL
	160 asf/fteif	> 35,000 WSCH/COLL
Library:	3,795 ASF	+ 3.83 ASF x DGE, < 3,000 DGE + 3.39 ASF x DGE, 3,000-9,000 DGE + 2.94 ASF x DGE, > 9,000 DGE
AV/TV/Radio:	3,500 ASF	+ 1.50 ASF x DGE, < 3,000 DGE + 0.75 ASF x DGE, 3,000-9,000 DGE + 0.25 ASF x DGE, > 9,000 DGE

For example, College A, with 26,000 ASF of lecture space, has capacity for 60,500 WSCH; i.e., 26,000/.429. If College A faces an actual "load" of 70,000 WSCH, then it has capacity for about 86 percent of its load; i.e. 60,500/70,000. This represents a deficit of 9,500 WSCH, 4,100 ASF, or about 14 percent. Additional classroom space is justified, particularly if enrollment growth is anticipated. Capacity/load relationships for other types of space are calculated in a similar fashion.

APPENDIX C

Capital Outlay Planning Model

Planning Rules and Assumptions

A. The future balance of district lecture and laboratory Weekly Student Contact Hours (WSCH) is based on the district's 1989 experience as derived from its Five-Year Facilities Plan.

B. The district's recent ratio of WSCH/full-time equivalent instructional staff - i.e., staffing practice - will remain constant over time.

C. The district's existing ratio of off-campus to on-campus WSCH is used to derive the future need for off-campus space.

D. The existing statewide ratio of non-capacity to capacity space (.33) is used to derive a district's future need for non-capacity space.

E. The ratio of available or funded asf to needed asf must drop below

Space Type			
Lab	Lecture AV/TV/Lib	Office Noncapacity	District Type
.96	.92	.88	Multi-campus
.92	.88	.84	Single campus

before more such space is built; but, when built, the "facility" or space increment is sized to the capacity needed (according to standards) two years beyond the time the space is to be occupied.

F. The following cost schedule is used:

Project Type	Total Cost for W, C, E ($/ASF)
Lecture	$173
Laboratory	250
Office	190
AV/TV/Library	225
Noncapacity	217

District costs are adjusted further by a "construction multiplier" to reflect the variation across areas of the State.

G. Three years are required, on the average, to prepare working drawings (W), and to construct (C) and equip (E) a facility. Under this schedule, the project appropriations are spread in the following way:

Year 1:	8% of total cost	(W)
Year 2:	76%	(C)
Year 3:	16%	(E)

The facility is occupied and its capacity added to the district's total capacity in year 4 (the year after this kind of space dripped to less than that needed (see planning Rule E). To avoid illegal projects (<$150,000) or scale diseconomies, no less than 1,000 asf of any kind of space will be built at any one time.

H. It will be possible to maintain the existing ratio of leased/rented: free/owned spaces that are utilized off-campus.

I. Needs for new space will be met by remodeling one or more of the other four types of space if the have/need ratio(s) of such space(s) exceed(s):

(continued)

	District with Enrollment per Campus
1.5 for multi-college	<5,000
1.4 multi-college	>5,000
1.4 single college	<5,000
1.3 single-college	>5,000

in the target year (2 years beyond occupancey of remodeled facility; but, in any case, remodeling shall-not reduce remodeled categories to capacity/need ratios of less than 1.1). (As of August 1989, this rule is not in the model.)

J. General remodeling (GR) needs due to functional or programmatic obsolescence (as opposed to maintenance) are derived by the followign variation of the Sherman-Dergis (1981) formula:

$$GR = (a) \quad (2/3\ rpv) \quad (age/1275)$$

where,
a = the fraction (say, 1/4) of buildings' asf expected to become functionally or programmatically obsolete during their lifetimes,
rpv = 1988-89 replacement value of buildings ($164/ASF),
2/3 = proportion of buildings (outside of foundation, outside walls, etc.) needing remodeling, and
1275 = assumption of 50-year building life.

K. Operating budget expenditures for building maintenance in 1988-89 are expected to continue at that level.

L. New maintenance needs (M) are based on the Sherman-Dergis (1981) formula:

$$M = [(2/3)\,(rpv)]\ [(age)\,(1275)]$$

This assumes (a) an average life of 50 years for buildings, (b) that 2/3 of any building will need maintenance, and (c) the 1988-89 replacement value for buildings.

M. One-fifth of existing deferred maintenance is eliminated each ear and, to funded, must exceed $10,000 in any given year.

N. New campuses (or centers that may become campuses) are proposed when (a) the average size of existing campuses exceeds 600 WSCH/acre and (b) the district service area exceeds:

Type of Service Area	Size of Service Area (in Square Miles)
Urban	100
Suburban	500
Rural	1,000

The acreage for a new campus site is assumed to be 120 acres.

O. New centers are proposed when . . . (criteria to be developed at a later date)

P. Costs to acquire and develop new sites vary across the state. The following schedule is used:

Type of Service Area	Acquire Site ($/acre)	Develop Site ($/acre)
Urban	$500,000	$40,000
Suburban	25,000	40,000
Rural	75,000	40,000

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ATTACHMENT B

California Community Colleges Long-Range Capital Outlay Planning Model

NOTE: This material is adapted and reproduced with permission from an internal staff report prepared by the Chancellor's Office of the California Communitry Colleges.

Overview

The Community College Long-Range Capital Outlay Planning Model is a simulation model that utilizes microcomputer spreadsheet technology to compare information on enrollment and existing facilities with projections of future enrollment and academic loads in order to forecast needed capital outlay.

The model is intended to make it possible to examine -- by district, region, and statewide, the long-term capital outlay implications of alternative scenarios in which enrollment forecasts might differ, planning assumptions change, and/or policies about facilities-utilization be altered.

The model was constructed by the Research and Analysis Unit of the Chancellor's Office, working closely with the Facilities Planning Unit of that same office. Considerable time was spent in exploring and specifying both written and unwritten rules that govern the planning of community college capital outlay in California. Output from an initial run of the model was compared to recent five-year plans submitted by community college districts and necessary corrections made to the model.

Following the initial test run, the model was run a second time in August 1989 and the results analyzed and presented to the Board of Governors at its September 1989 meeting in Agenda Item 5 on Long-Range Capital Outlay Planning.

The model's structure consists of a knowledge base, inference mechanism, and output for each of the 71 California community college districts. Each run of the model analyzes several different scenarios for each district. The results of these scenarios are then summarized by region and, finally, for statewide totals. (See Appendix A on page 96 for the model's basic structure.)

The local focus of community colleges makes it necessary to begin the model at the district-level and summarize the results to regional and statewide levels. Use of only a statewide model would not be adequate for this purpose since it would obscure much of the need. To illustrate: While some community colleges are "overbuilt" in lecture space (i.e., they have more lecture space than the standards say they need), there is still a need to build lecture spaces for other colleges because they are underbuilt. In a statewide approach, by contrast, these situations could cancel each other with the result that no needed lecture space is indicated. The use of district-level data is especially important because community college needs are determined locally and students are not "redirected" from one college that might be underbuilt to another college that might be overbuilt. (A college-service area-level of aggregation was even considered during the model's development, but discarded because of the lack of enrollment forecasts and potential complexity.)

Output

The model produces long-term estimates (currently, to the year 2005, although this can be adjusted) by type of outlay and facility:

Outlay

- acquire sites and develop new campuses
- construct and equip new facilities
- remodel and alter existing facilities
- maintain existing facilities
- lease and rent off-campus facilities
- replace equipment

Facility

- lecture rooms

- laboratories and shops
- audio-visual, radio/television, library spaces
- offices
- supporting spaces

Thus far, the focus has been on statewide estimates, and Appendix B on page 97 illustrates this output. The model, however, is structured to provide estimates for both regional and district levels of aggregation.

Inference mechanism

The inference (or reasoning) mechanism of the model consists of the "macros" (time-saving instructions to the computer), equations, formulas, and functions on the spreadsheet that translate the knowledge base into the output. The inference mechanism is the largest component of the model and, with the exception of the macros, is generally unchanged from one run of the model to another. The macros vary with each run and can introduce changes to the knowledge base (i.e., data, standards, rules, assumptions, etc.), structure alternative enrollment scenarios, or revise the inference mechanism itself. An illustration of the contents of some cells in the inference mechanism of the model appears in Appendix C on page 98. The particular cells in this illustration contain some of the formulas that govern the addition of new spaces. When existing capacity/load ratios fall below a certain level, as defined by Planning Rule "E," additional space is planned for the academic load expected 2 years beyond facility occupancy. A complete listing of cell contents for the model is available on request.)

Knowledge Base

The model's knowledge base consists of:

- data on district facilities and enrollment
- space and utilization standards
- planning rules and assumptions

Twenty-nine different data elements about existing and future enrollments, existing facilities, and costs for each district are entered into the model. (Elements are listed on page 89 above.) The values entered for all of these elements (like the existing square feet of lecture space) are district-specific. Space and utilization standards are the same for all districts and are stated in terms of the square feet of facilities that staff and students require for their activities. Standards for California community colleges are set forth in law and are shown on page 90 above. Standards for classrooms and laboratories are derived from policies on how many hours per week a room is to be used, how many stations in the room are to be occupied during that time, and the amount of floor space needed for each station. Standards for office, media, and library spaces are based on the number of staff or students for who the spaces are available. Supporting spaces for which there are no standards are referred to as non-capacity.

The 16 planning rules and assumptions used thus far for the first and second runs of the model are listed on pages 91-92 above. For the most part, these rules and assumptions represent an attempt to quantify existing policies and procedures. In some cases, the rules are unwritten, but rigorously followed by facility planners. In other cases, rules or assumptions may change periodically.

Qualitative "rules of thumb" have been reduced to their approximate quantitative equivalent for use in the model. An illustration of this is the criteria for proposing new community college campuses. Districts plan new campuses for several reasons. Population growth may be taking place in a part of the district beyond a reasonable commuting distance to existing campuses. Or, an existing campus may not physically be able to accommodate additional students. In some cases, lack of parking may constrain the expansion of an existing campus. The rule used in Run 2 of the model is:

- New campuses (or centers slated to become campuses) are proposed when: (a) the average size of existing campus(es) in a district exceeds 750 weekly student contact hours (WSCH), and (b) the service area(s) of existing campus(es) in a district exceeds:

Type of Service Area	Size of Service Area (in Square Miles)
Urban	100
Suburban	500
Rural	1,000

Part (a) of this rule represents a 25 percent increase in the existing utilization of campus sites. Currently, the average community college in California enrolls 11,000 students on 150 acres - approximately 600 WSCH per acre. More (less) acreage and facilities can support more (fewer) students, although other factors may be more important, such as the regional location of programs, service area topography, and character of existing facilities.

Part (b) of this rule is based on the assumption that a commuting time of not more than 30 minutes - including 25 minutes travel and 5 minutes to find parking - to (and from) campus is reasonable. This assumption is then applied against expected average commuting speeds in different areas (15 mph urban, 30 mph suburban, 45 mph rural) to derive the approximate mile radius and square-mile area to be served by each campus.

Another important assumption used in Run 2 of the model is that the current proportion of instruction taught at off-campus outreach sites (about 1 in every 10 WSCH) will continue. An increase (decrease) in this proportion could result in a decrease (increase) in the number of new campuses needed.

Although the "new campus rule" is not written, the underlying concepts appear valid. The actual values in the rule can be reviewed further, and it may need to be extended to cover major centers that are not expected to become campuses. Thus, the model can be useful in suggesting the need for new campuses within districts and regions and across the state, even though the procedure for gaining approval of these sites is more complex. Extensive criteria are used in the actual review of such proposals by the Board of Governors and the California Postsecondary Education Commission.

Technical/physical aspects of the model

Currently (December 1989), the model is running on an IBM PS-2, using Lotus 123, although it could be adapted to run on other systems with other software.

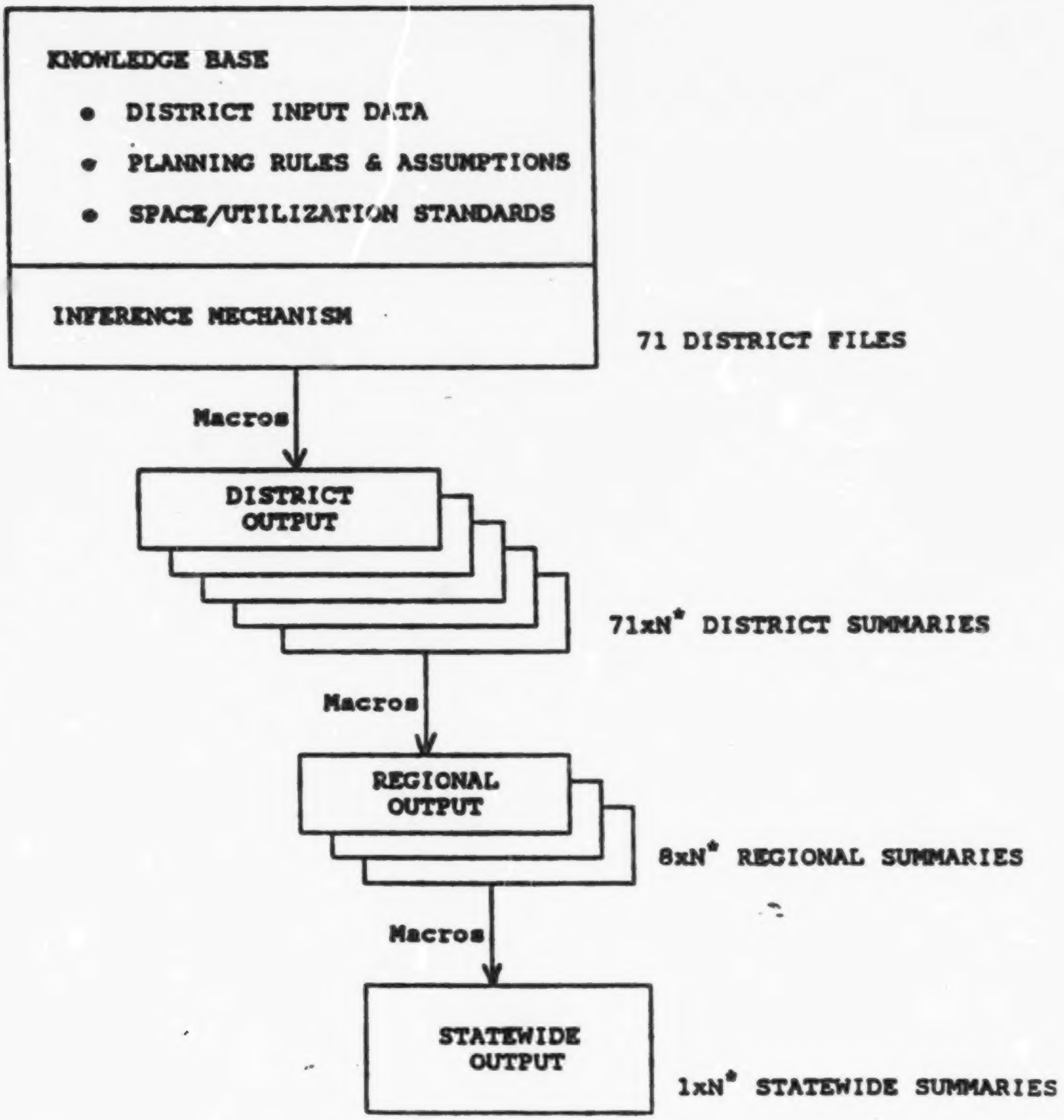
Physically, the model consists of 71 large Lotus 123 worksheets (one for each community college district). When run, these files automatically generate smaller "values" files, each containing a summary of results or output from a different scenario (again see Figure 1 of Attachment A on page 84). Three enrollment scenarios were examined in Run 2 of the model during August 1989.

For Run 3 and further runs of the model, each of the 71 district worksheets are to be recalculated, again generating the summary output files for each of the scenarios to be examined.

For each run of the model, another set of worksheets summarizes results of the district output files for each of eight regions in the state. A statewide worksheet summarizes the regional results.

APPENDIX A

California Community Colleges
Long-Range Capital Outlay Planning Model
Structure


KNOWLEDGE BASE
DISTRICT INPUT DATA
PLANNING RULES & ASSUMPTIONS
SPACE/UTILIZATION STANDARDS
INFERENCE MECHANISM
71 DISTRICT FILES
Macros
DISTRICT OUTPUT
71xN* DISTRICT SUMMARIES
Macros
REGIONAL OUTPUT
8xN* REGIONAL SUMMARIES
Macros
STATEWIDE OUTPUT
1xN* STATEWIDE SUMMARIES

* N = Number of scenarios analyzed.

APPENDIX B

Illustration of Output from Planning Model Initial Test Run, April 1989

CAPITAL OUTLAY 4/89 MODEL SUMMARY

STATEWIDE TOTAL	TOTAL CAP'TL OUTLAY	ACQUIRE, DEV. NEW SITES	CONSTRUCT, EQUIP NEW	REMODEL EXISTING	CONST/EQUIP LECTURE	CONST/EQUIP LABORATORY	CONST/EQUIP OFFICE	CONST/EQUIP AVTV/LIBRARY	CONST/EQUIP NONCAPACITY
1988-89									
1989	$531,716,254	$9,000,000	$503,701,252	$19,015,002	$4,996,748	$245,523,266	$31,962,363	$199,988,674	$16,446,030
1990	$120,616,843	$82,000,000	$19,451,813	$18,365,030	$4,720,454	$6,739,997	$4,902,704	$2,539,663	$0
1991	$90,105,637	$49,200,000	$20,117,404	$20,700,233	$3,167,025	$12,509,008	$3,974,326	$583,167	$0
1992	$56,235,022	$13,800,000	$22,091,001	$19,543,161	$2,304,651	$9,709,414	$10,420,205	$1,590,163	$0
1993	$113,093,712	$4,000,000	$85,670,364	$22,623,348	$1,979,841	$72,572,354	$7,597,061	$5,100,062	$0
5-Year Summary	$911,767,468	$159,600,000	$651,032,714	$100,334,754	$17,208,720	$347,054,038	$58,856,658	$209,809,720	$16,446,030
1994	$84,520,600	$0	$63,369,701	$21,150,900	$639,960	$54,398,125	$6,655,165	$4,765,749	$0
1995	$87,665,157	$0	$63,921,737	$23,743,421	$3,765,200	$33,774,003	$9,053,663	$16,101,344	$1,303,157
1996	$109,668,407	$9,000,000	$76,379,730	$24,088,678	$9,513,518	$32,670,316	$4,168,940	$12,495,966	$12,379,992
1997	$81,112,573	$4,000,000	$51,331,972	$24,980,601	$5,084,933	$15,664,581	$14,120,016	$10,674,976	$2,606,314
1998	$109,151,975	$0	$82,922,774	$26,229,201	$8,163,203	$40,008,200	$22,166,451	$12,209,636	$45,848
1999	$125,458,788	$9,000,000	$90,103,559	$26,275,229	$6,193,830	$63,417,101	$13,197,561	$4,765,749	$435,746
2000	$95,336,323	$13,000,000	$53,181,799	$28,354,524	$2,435,591	$35,501,854	$5,927,257	$9,365,252	$752,654
2001	$106,094,757	$13,000,000	$63,555,787	$28,738,971	$1,201,611	$44,252,856	$4,700,143	$9,488,717	$7,136,884
2002	$168,827,101	$4,000,000	$134,125,695	$29,901,406	$1,027,577	$111,857,304	$9,474,681	$8,476,604	$10,130,934
2003	$216,715,964	$30,000,000	$155,768,510	$30,947,425	$2,197,604	$121,646,178	$8,359,419	$15,857,046	$9,528,748
2004	$165,100,512	$4,000,000	$128,330,583	$31,969,928	$6,502,993	$84,910,101	$8,354,068	$8,695,220	$16,275,774
2005	$55,453,721	$0	$21,636,916	$33,816,805	$1,307,193	$13,679,673	$1,498,091	$1,205,190	$3,150,028
16-Year Summary	$2,316,681,405	$249,600,000	$1,636,341,562	$430,539,843	$66,001,943	$998,835,930	$166,331,831	$328,530,975	$80,192,132

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APPENDIX C

Illustrative Listing of Cells in Model's Inference Mechanism

```
A88: [W27] 'PLAN ASF/LECTURE
C88: (F0) [W13] @IF(C99<$C95,F106-C170,0)
D88: (F0) [W12] @IF(D99<$C95,G106-D170,0)
E88: (F0) [W12] @IF(E99<$C95,H106-E170,0)
A89: [W27] '       LABORATORY
C89: (F0) [W13] @IF(C100<$C96,F107-C171,0)
D89: (F0) [W12] @IF(D100<$C96,G107-D171,0)
E89: (F0) [W12] @IF(E100<$C96,H107-E171,0)
A90: [W27] '       OFFICE
C90: (F0) [W13] @IF(C101<$C94,F108-C172,0)
D90: (F0) [W12] @IF(D101<$C94,G108-D172,0)
E90: (F0) [W12] @IF(E101<$C94,H108-E172,0)
A91: [W27] '       AV/TV/LIBRARY
C91: (F0) [W13] @IF(C102<$C95,F109-C173,0)
D91: (F0) [W12] @IF(D102<$C95,G109-D173,0)
E91: (F0) [W12] @IF(E102<$C95,H109-E173,0)
A92: [W27] '       NONCAPACITY
C92: (F0) [W13] @IF(C103<$C94,F110-C174,0)
D92: (F0) [W12] @IF(D103<$C94,G110-D174,0)
E92: (F0) [W12] @IF(E103<$C94,H110-E174,0)
A93: [W27] 'PLAN ASF/LEASE,RENT: RULE G
D93: (F0) [W12] ((0.429)*(D137*D131))+((D116)*((1-D137)*D131))
E93: (F0) [W12] ((0.429)*(E137*E131))+((E116)*((1-E137)*E131))
A94: [W27] 'RULE E:LAG HAVE/NEED OFFICE
B94: [W12] '.84,.88
C94: [W13] @IF(C186>1,0.88,0.84)
D94: [W12] @IF(D186>1,0.88,0.84)
E94: [W12] @IF(E186>1,0.88,0.84)
A95: [W27] 'RULE E: H/N LEC,AVTV/LIB
B95: [W12] '.88,.92
C95: [W13] @IF(C186>1,0.92,0.88)
D95: [W12] @IF(D186>1,0.92,0.88)
E95: [W12] @IF(E186>1,0.92,0.88)
```

```
A96: [W27] 'RULE E: HAVE/NEED LAB
B96: [W12] '.92,.96
C96: [W13] @IF(C186>1,0.96,0.92)
D96: [W12] @IF(D186>1,0.96,0.92)
E96: [W12] @IF(E186>1,0.96,0.92)
A97: [W27] 'HAVE(ASF)/NEED(ASF)/ON-C
C97: (F2) [W13] (C168/C104)
D97: (F2) [W12] (D168/D104)
E97: (F2) [W12] (E168/E104)
A98: [W27] '   Capacity
C98: (F2) [W13] (C169/C105)
D98: (F2) [W12] (D169/D105)
E98: (F2) [W12] (E169/E105)
A99: [W27] '      Lecture
C99: (F2) [W13] (C170)/(C106)
D99: (F2) [W12] (D170)/(D106)
E99: (F2) [W12] (E170)/(E106)
A100: [W27] '      Laboratory
C100: (F2) [W13] (C171/C107)
D100: (F2) [W12] (D171/D107)
E100: (F2) [W12] (E171/E107)
A101: [W27] '      Office
C101: (F2) [W13] (C172/C108)
D101: (F2) [W12] (D172/D108)
E101: (F2) [W12] (E172/E108)
A102: [W27] '      AV/TV/Library
C102: (F2) [W13] (C173/C109)
D102: (F2) [W12] (D173/D109)
E102: (F2) [W12] (E173/E109)
A103: [W27] '   Noncapacity
C103: (F2) [W13] (C174/C110)
D103: (F2) [W12] (D174/D110)
E103: (F2) [W12] (E174/E110)
```

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3

Cost Estimates and Simulations for Operating Budgets

Introduction

This paper presents background materials regarding operating budgets used as a part of the Commission's ongoing long-range planning project for public higher education. It analyzes information on levels of educational and general expenditures for current operations costs needed to build new campuses of the University of California, the California State University, and the California Community College systems. Several displays show various iterations of these non-capital costs, divided by segmental enrollments, to arrive at estimations of per-student expenditures in five direct and administrative cost categories.

Purposes of the study

The information developed in this paper is intended for use in planning for growth in the public sector of California higher education. Fiscal data on the segments have been compiled from several sources and defined with assumptions reasonable for planning purposes in order to determine financial support ratios for each segment and per-student costs for the many ongoing operations of existing campuses. The paper makes this determination in such a way as to project the likely amounts of funds needed to operate new campuses. These data are highly aggregated and are averaged to arrive at final per-student cost data for each expenditure category and as totals (averages) for each system. By explaining the analytical assumptions and methodologies employed in completing these cost calculations, Commission staff expect to further the discussion of what factors are appropriate for inclusion in these sorts of calculations. These calculations are not anticipated as being the final word on projected operating costs in the segments, nor are the assumptions and sources of information they are based upon closed to further refinement. Nonetheless, the data on per-student current operations costs developed here are reasonable planning estimates for use in evaluating the feasibility and fiscal efficiency of current operations at campuses in the State's public segments.

Limitations of the study

By themselves, the raw numbers and support ratios generated here do not explain the expenditures made on behalf of public higher education, nor do they make judgments about the quality or productivity of these estimates of costs. This exercise to determine operating cost estimates also does not address the important issue of the different educational missions of the segments or the students they serve. These missions -- along with programs of current operation, historic planning decisions, and several other factors -- greatly impact not only the amounts of monies spent in the public segments but also the patterns of spending that have evolved over the years.

In addition it is important to note that for the University, the State University, and the community colleges, the fiscal information presented here derives planning estimates of costs that are not designed for use in budgeting. These cost calculations are rough averages of combinations of data on campus-level and systemwide educational and general expenditures. The per-student costs developed here would *not* be appropriate for use in a budgeting formulae for the reasons discussed above. Rather, this report is constructed to present a general pattern of the levels of expenditures in selected cost categories at the public segments. These initial cost calculations are an attempt to provide guidance in the planning of future campuses in terms of expenditures for the ongoing operations of these facilities.

Need for future study

Commission staff are committed to continuing to refine these analyses of expenditures patterns. The issues of costs and cost containment will always be before higher education planners, as will issues of productivity and accountability.

In future conversations with segmental representatives, legislative staff, and others, Commission staff anticipate that further refinements will be made to these data. Efforts will continue to discover, isolate, and remove cost centers from these calculations that will not be replicated in newly constructed campuses. As campus health science-related spending was extracted from the University's displays, more detailed information on Agricultural Extension will be sought to exclude expenses for this program from these calculations, if determined to be appropriate. Moreover, in a later study, fiscal data from the faculty salary comparison institutions of the University and State University as well as from other out-of-state colleges and universities will be examined to compare and contrast with the cost information developed here.

Sources of cost information

The information on costing categories used in this study of the operating costs of educating students at the University, State University and community college systems was taken from three major sources: the National Center for Education Statistics, the University of California's *Campus Financial Schedules*, and the California State University's *Support Budget* for fiscal years 1986 and 1987.

National Center for Education Statistics

The National Center for Education Statistics (NCES) of the United States Department of Education compiles data through its Integrated Postsecondary Education Data System (IPEDS) -- formerly the Higher Education General Information Survey (HEGIS). Annually it sends survey forms to state-level and systemwide offices with detailed instructions on what data should be included and what should be excluded.

In California, the Postsecondary Commission receives these survey forms from the National Center and sends them to the segmental offices, which then distribute them to campuses and coordinate their return to the Commission. The Commission sends the survey forms directly to California's independent colleges and universities and collects them back from those institutions. The Commission then sends all of the information to the National Center in Washington, D.C.

The National Center subjects the data to a series of edits, checking for internal consistencies within the responses themselves (for example, making sure the rows and columns add up) and also checking the data against prior year submissions to see if they make sense. Large discrepancies from one year to the next are highlighted and the institutions involved are contacted directly by the Center for clarification.

The main body of information analyzed in this report is compiled from the "Current Funds Expenditures and Transfers" section of the IPEDS reporting form. Total "educational and general expenditures" are shown for each of the categories in the displays. For the University of California, State General Fund revenues supply, on average, more than 85 percent of these educational and general expenditures, tuition and fee revenues supply less than 8 percent, and various small sources fund the remaining 7 percent. These percentages are rough averages that cut across programs on all nine of the University's campuses; the actual ratios of support funds vary by program and by campus. For example, the category of "instruction" receives no funding from resident student fee revenues but does receive it from non-resident tuition, while "student services" receives a large amount of funding from resident student fee revenues, although this amount varies from campus to campus. A significant amount of the student-based revenues is generated by non-resident tuition, particularly at University campuses with high numbers of nonresident students. For the California State University, the combination of General Fund and student revenues supplies its total educational and general expenditures, with General Fund revenues providing 87 percent and student tuition and fees 13 percent.

Differences in the way that student fee revenues are accounted for affect these cost comparisons. For all three systems, State policy is that non-resident students are charged tuition to offset to the State their cost of instruction, and revenue from nonresident tuition charges are direct reimbursements to the State General Fund. For both the State University and the Community Colleges, revenue from resident student fees are also reimbursements to the State General Fund, although these revenues are accounted for separately in the University of California. In order to obtain comparable intersegmental data on the total costs to operate programs, student fee revenues were included in the calculations for this analysis. If they had been excluded, the result would suggest a lower actual cost profile for the University than for the other segments because of this accounting difference.

The University's Campus Financial Schedules and the State University's "Gold Book"

The University of California annually publishes its *Campus Financial Schedule* that reports campus-by-campus financial information in several ways: revenues by sources of funds, and expenditures by uniform classification categories, fund source, and object of expenditure -- to name a few. That document was used to disaggregate health-science-related expenditures and to determine the percentages of educational and general expenditure by funding source discussed above.

The California State University's *Support Budget* (commonly known as *The Gold Book*) provides full-time-equivalent (FTE) enrollment data and other information on its cost categories.

Other sources of information

Commission staff also used several other books and reports to collect pertinent fiscal data on the public higher education segments. It employed the Office of the Legislative Analyst's annual *Analysis of the Budget* and the *Governor's Budget* both for general fiscal information and to determine the comparability of the cost categories used by the two public segments. Finally, headcount enrollment information in the 1986 and 1987 fiscal years was compiled from the Commission's own *Data Abstract 8*, "Fall 1986 Enrollment by Sex, Ethnicity, Student Level, and Full-Time/Part-Time Status, University of California and the California State University" (May 1987).

Explanation of the cost categories

This report contains tabular displays showing funds spent on public postsecondary education in California through five cost categories used to account for current operations spending -- Instruction, Academic Support, Student Services, Institutional Support, and Plant Operations. These five categories are examined to derive different measurements of support per full-time-equivalent student for the University and State University, and per average daily attendance (ADA) for the community colleges.

The five expenditure categories are generally accepted nationwide as appropriate accounts for operating expenses in postsecondary education enterprises. They are used in both IPEDS of the National Center for Education Statistics and also California's State budgeting process. As they pertain to California's public four-year segments, the five categories are defined as follows:

1. *Instruction*

At the University of California, "general campus instruction" includes most of the resources associated with the schools and colleges located on its eight general campuses. At the State University, "regular instruction" includes the instructional programs operating during the academic year that are managed by the regular academic departments. This category includes expenditures for faculty, teaching assistants, instructional support staff, and supplies and equipment that are a part of the formal degree or certificate curriculum programs at both segments. Excluded from the analysis are both segments' self-supported extension programs.

2. *Academic Support*

At both the University and State University, the largest function of the academic support program is to provide for library and audiovisual services to students and faculty. University libraries serve both the instructional and research needs of the campuses and the research community, while State University libraries house data processing services and data collection and dissemination support for activities such as nursery schools, college farms, marine science facilities, and other ancillary programs.

3. *Student Services*

Both segments' student services programs fund activities designed to contribute to the students' physical well-being and intellectual, cultural and social development outside of the context of the formal instruction program. They include expenditures for organized Student Service administrative activities like counseling and career guidance, students admissions and records and student health services. Additionally, this cost category houses administrative expenses for student affirmative action programs in both segments. Included here are the University's Early Outreach, Undergraduate Minority Scholars, and Graduate and Professional Student Affirmative Action Programs and the State University's State University Grant Program, Educational Opportunity Program, and various disabled students services programs.

4. *Institutional Support*

Activities funded within this function include planning, policy making and coordination within the offices of the systemwide offices, campus level administrations and governing boards for the University and State University. Specific operations include such day-to-day functions as accounting, campus police, payroll and personnel, and publications. At the University, this category also includes federal program administration and certain self-supporting services such as telephones, garages and equipment pools. At the State University, the development of management policies and the provision of communications, purchasing and inventory control, and legal services are funded out of the Institutional Support program.

The IPEDS form of the National Center for Education Statistics collects information on expenditures for maintenance of higher education facilities as a separate category from "Institutional Support," and therefore the State University reports Physical Plant Operation separately rather than as a subcategory under "Institutional Support." Following the IPEDS format, the State University's Physical Plant Operations expenditures have been taken out of Institutional Support and reported as Plant Operation, consistent with similar expenditures at the University.

5. *Plant Operation*

This expenditure category includes the University's "Operation and Maintenance of Plant" program and the State University's "Physical Plant Operations." It includes resources for the maintenance, preservation, and renewal of State-supported physical plant space in both segments. Major components of this category include the maintenance of electrical, heating, and plumbing systems, buildings and grounds maintenance, janitorial services, and painting and structural repairs.

Calculation of cost information per student

Expenditures in the Instruction and Academic Support categories, when divided by enrollment, yield a cost number called "Direct Average Instructional Cost per Student " This cost measurement is most appropriate for developing gross estimates of operating costs used here to plan for the building of new campuses. These are distinguished from other kinds of cost calculations which might be appropriate for other purposes in many ways. First, they exclude expenditures for research and public service which are only indirectly related to the instructional mission. Second, they average costs among all levels of instruction, and kinds of programs, across all campuses, to come up with a gross systemwide average. Third, they assume that the costs of adding all students are the same, without regard to economies of scale. In this way, these figures are different from others that appear in the literature and that are used for budgetary or other purposes, some of which include the total, direct and indirect, cost of instruction; others which impute a marginal cost, which is the cost to add one student recognizing economies of scale. The Commission staff felt that the direct, average instructional cost per student was the most appropriate one to use for this exercise, since its main objective is to estimate the gross potential costs to the State to build a campus in one segment as contrasted to another segment.

Effects of the level of instruction

The cost information presented here does not take into account the different levels at which instruction is provided to the students. The level of instruction has a significant impact upon any direct marginal (per-student) cost calculations -- it takes greater fiscal resources, for example, to educate a postgraduate student in the hard sciences than it does a lower-division general education student. The current ratio of undergraduate to graduate instruction proposed in the University's Graduate Enrollment Plan is 4:1, and the calculations in this report assume maintenance of that ratio. If the proportion of undergraduate to graduate students is changed, however, to increase graduate student enrollment to a proportion of full-time equivalent greater than 20 percent, the "per-student" costs shown here will increase substantially. In such a case, an attempt to isolate those costs per student that are specific to the provision of graduate education would be the most analytically correct way to determine accurate planning cost estimates.

Reasons for inclusion and exclusion of expenditure categories

The most significant trait of all five of the expenditure classifications analyzed here is that they are funded almost exclusively by the State for the ongoing operations of its public higher education enterprise. Since the taxpayers of the State of California will be the chief source of funds for any new public higher education institutions, this analyses is limited to cost information affecting State-funded programs. Thus although all three of California public segments also have self-supported independent operations and auxiliary services, these expenditures are not included in this report.

Three other expenditure categories -- "Scholarships," "Research," and "Public Service" -- are not used in the per-student costs listed in the following displays but are included in the Grand Total column at the right side of each display. Expenditure information on these programs is not available in the detail necessary to disaggregate these sources in the manner consistent with the other cost calculations. In addition, scholarship funds provided for student financial aid at both segments are funded heavily by student fees, while the focus of this study is on costs that the State must bear as enrollment levels change. Moreover, the definitions and functions of the "Research" and "Public Service" cost categories are not comparable between the two segments, as illustrated below.

Research: Under the State's Master Plan for Higher Education, the University is California's primary research agency. It conducts basic and applied research for state and national entities, both public and private, as a part of its educational mission. This research -- along with departmental or instruction-related research -- provides training for scholars in their advanced graduate and professional instruction programs. The State University's research focus is usually limited to the provision of grants and leaves for faculty to conduct research expected to improve classroom instruction by keeping faculty members aware of current developments in their fields of study. The significant differences in the focus and scope of research between the two segments makes this cost category an inappropriate one to calculate the expenditure comparisons described above.

Public Service: Public service is a substantial part of the educational mission of the University and the State spends more than $50 million a year in this category at the University. Activities funded here include the University's Cooperative Extension, Lawrence Hall of Science, California Writing and Math Projects, and several other programs. These activities are designed either to increase access to historically underrepresented groups to the University or to help local communities develop their resources. The State University runs a much smaller public service program (funded at just over $1 million a year) that is designed to assist the general public. These two programs are not compatible, either in design or mission, and are excluded from the cost comparisons.

Current operations costs of California public higher education

University of California

Display 1 on pp. 104-105 shows current fund expenditures of the University of California for fiscal years 1986 and 1987 in the expenditure categories discussed earlier. For this report, fiscal data for both years instead of only one were examined in order to de-emphasize one-time fluctuations in expenditures that occur in any given fiscal year, but no such fluctuations were discovered in this examination, and so the following text focuses on data for the 1987 fiscal year.

Effects of the San Francisco campus: Due to the costly health sciences programs offered by the University of California at San Francisco -- the only type of program operated by that campus -- all of the University's displays present column totals that exclude this campus as well as systemwide totals that include it. As can be seen, direct instruction (DI) per-student expenditures for 1987 ranged from a low of $6,483 at the University's Santa Barbara campus to a high of $63,386 at San Francisco.

DISPLAY 1 Current Fund Educational and General Expenditures and Transfers for Campuses of the

1986

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,000	$196,458,170	$53,729,883	$8,627	$35,777,676	$56,234,388	$41,715,398
Davis	19,093	147,233,088	49,142,477	10,285	22,715,217	25,448,766	29,038,854
Irvine	13,753	104,267,512	25,894,520	9,464	15,725,031	21,729,862	10,885,311
Los Angeles	30,527	312,619,763	134,184,497	14,636	30,240,837	62,934,947	42,215,538
Riverside	5,348	37,318,441	11,480,317	9,125	6,795,858	11,218,424	12,423,157
San Diego	15,087	106,742,334	42,946,633	9,922	15,706,292	27,548,118	25,563,037
San Francisco	3,505	105,707,557	90,080,935	53,907	3,779,632	28,763,812	13,333,418
Santa Barbara	17,159	76,720,507	20,679,544	5,676	19,938,820	21,299,450	16,868,436
Santa Cruz	7,137	37,242,578	9,763,624	6,586	10,089,744	11,958,407	7,884,535
TOTAL	140,609	1,124,309,950	437,902,430	11,110	160,769,107	267,136,174	199,927,684
TOTAL Excluding U.C.S. F.	137,104	$1,018,602,393	$347,821,495	$9,966	$156,989,475	$238,372,362	$186,594,266

1987

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,412	$212,439,477	$57,815,185	$9,189	$40,136,643	$51,194,044	$43,480,511
Davis	19,842	171,130,266	61,373,476	11,718	23,814,524	23,462,671	33,284,043
Irvine	14,393	120,508,354	37,493,075	10,978	20,321,165	19,880,806	14,266,447
Los Angeles	31,499	358,122,329	139,286,635	15,791	32,366,010	54,994,032	47,689,070
Riverside	6,150	42,844,453	12,597,590	9,015	8,137,847	10,976,953	15,043,243
San Diego	15,471	133,836,219	47,847,500	11,744	17,982,684	25,776,061	26,903,302
San Francisco	3,580	120,293,175	106,628,120	63,386	4,166,389	29,748,657	16,470,568
Santa Barbara	17,018	87,447,670	22,876,265	6,483	22,163,536	16,008,696	17,736,373
Santa Cruz	8,618	46,635,904	11,290,131	6,722	11,857,258	11,438,418	8,567,187
TOTAL	145,983	1,293,257,847	497,207,977	12,265	180,946,056	243,480,338	223,440,744
TOTAL Excluding U.C.S. F.	142,403	$1,172,964,672	$390,579,857	$10,980	$176,779,667	$213,731,681	$206,970,176

Source: California Postsecondary Education Commission staff analysis of data submitted by the University on Part B of the

University of California, Fiscal Years 1986 and 1987

Instruction Related Costs per Student	Research	Public Service	Scholarship		Transfers	Grand Total
			Unrestrict.	Restricted		
$13,238	$130,365,251	$37,349,040	$7,778,992	$27,244,183	$3,227,055	$589,880,036
14,329	102,352,054	12,861,493	2,986,225	11,068,330	1,776,248	404,622,752
12,979	41,382,348	5,085,946	2,610,580	7,443,970	4,929,293	239,954,373
19,071	151,030,052	26,646,423	10,781,233	26,371,673	8,757,863	805,782,826
14,816	36,750,931	629,837	1,112,612	2,932,540	384,140	121,046,257
14,483	130,438,466	5,674,093	3,583,749	12,107,690	5,822,714	376,133,126
66,538	126,223,154	11,006,180	1,542,768	12,347,705	7,710,195	400,495,356
9,063	30,620,641	3,137,131	3,336,176	8,341,480	788,844	201,731,029
10,780	16,438,538	1,701,048	1,578,928	5,231,085	129,211	102,017,698
15,575	765,601,435	104,091,191	35,311,263	113,088,656	33,525,563	3,241,663,453
$14,211	$639,378,281	$93,085,011	$33,768,495	$100,740,951	$25,815,368	$2,841,168,097

Instruction Related Costs per Student	Research	Public Service	Scholarship		Transfers	Grand Total
			Unrestrict.	Restricted		
$13,772	$146,838,927	$23,530,481	$7,255,134	$31,339,127	$13,554,897	$627,584,426
15,778	118,955,205	14,629,811	3,279,494	12,969,117	21,081,019	483,979,626
14,762	46,809,392	4,436,501	3,167,742	9,554,630	16,071,759	292,509,871
20,079	176,829,024	12,438,146	9,266,346	29,703,471	58,835,074	919,530,137
14,569	40,157,854	424,227	1,224,301	3,754,919	1,872,156	137,033,543
16,311	147,843,749	2,773,414	3,947,263	15,265,927	27,080,039	449,256,158
77,460	151,226,334	4,673,943	1,374,260	14,608,760	40,830,738	490,020,944
9,768	37,539,858	1,505,154	3,171,096	10,171,222	1,120,511	219,740,381
10,419	18,613,808	937,634	1,255,975	6,492,927	473,577	117,562,819
16,703	884,814,151	65,349,311	33,941,611	133,860,100	180,919,770	3,737,217,905
$15,175	$733,587,817	$60,675,368	$32,567,351	$119,251,340	$140,089,032	$3,247,196,961

annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

The instructionally related costs (IRC) for each of the individual campuses, and for the University systemwide, are shown in the eighth column from the left; this is the number most pertinent to the current planning exercise. That is, using the 1987 fiscal year to project current operations expenses at a new campus in the University system -- given the expenditure patterns of the campuses in the University system displayed here -- an average of $16,703 in State revenues would need to be allocated for each full-time-equivalent student to replicate operations at the existing University campuses. The equivalent systemwide per-student costs for the University excluding the San Francisco campus is $15,175. These two approximations assume that the programs of study offered, and the ratios of expenditures in cost categories, would be identical to those on the existing campuses.

Effects of health sciences programs on other campuses: Instruction in the health sciences is offered, to varying degrees, on every University campus except Santa Barbara and Santa Cruz. Displays 2, 3, and 4 on pp. 108-113 show efforts to remove health science-related expenditures from the cost categories, which are described below. The net effects of these efforts are actually to *understate* expenditures for each full-time-equivalent student on the eight University general campuses by "over-excluding" health science-related expenditures, particularly in the administrative categories. Generally, the method used to determine and extract health science-related costs at the general campuses is to replicate the expenditure levels at the University's health sciences campus in San Francisco and multiply these totals by the full-time-equivalent enrollment in health sciences on the respective general campuses.

In campuses with a relatively low proportion of health sciences students -- like Berkeley and Riverside -- such across-the-board prorations overstate the actual fiscal resources consumed by health sciences students. This is because the large unit costs generated by the very well funded University of California, San Francisco health sciences programs are spread over a smaller number of students at these campuses. The marginal increases in levels of service actually needed for these few health science students are almost certainly less than what is generated by spreading the large per-student costs generated using San Francisco campus data. While using the "UCSF-Model" is appropriate for this initial exercise in removing health-science program costs from these planning calculations, the Commission staff is exploring more accurate methods of discounting for these costs in the future.

The first step of this exercise (shown in Display 2) was to remove health sciences expenses from the "Instruction" and "Academic Support" categories. The University's financial schedule 1-B was used to isolate unrestricted current fund expenditures in the General Academic programs that are specific to the health professions. These expenditures were then extracted from the "Instruction" category on each campus. In much the same manner, monies provided for ancillary support of selected health professions in the "Academic Support" category were removed from the expenses reported for this category.

Removing health science-related costs from the "Instruction" and "Academic Support" categories lowered the systemwide direct instruction per-student costs for the 1987 fiscal year (excluding the San Francisco campus) by approximately 25 percent and lowers the instructionally related costs per-student costs by 18 percent.

The next step was to attempt to remove health science-related expenditures in the "Student Services" category from the calculations. Since these costs are not displayed in such a way in which they can be disaggregated, total full-time-equivalent enrollment, per campus and as a system, was divided by the full-time-equivalent enrollment in health sciences programs to arrive at the percentage of total full-time-equivalent students who are in the health sciences. Expenditures in the "Student Services" category were then discounted by this percentage. Campuses with larger health sciences programs, such as Los Angeles and Davis, had their "Student Services" expenditures discounted by significant amounts, while the effect on campuses with relatively smaller health sciences programs, like Riverside and Berkeley, was barely measurable. The average percentage reduction for the University as a system (excluding the San Francisco campus) was just over 5 percent.

This second step of removing health science-related costs from the "Student Services" category lowered the instructionally related per-student costs by another 1 percent in the 1987 fiscal year. Including

DISPLAY 2 *Current Fund Educational and General Expenditures and Transfers for Campuses of Expenditures Excluded, Fiscal Years 1986 and 1987*

1986

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,000	$189,382,754	$51,760,890	$8,315	$35,777,676	$56,234,388	$41,715,398
Davis	19,093	88,004,859	39,271,042	6,666	22,715,217	25,448,766	29,038,854
Irvine	13,753	45,367,288	25,873,410	5,180	15,725,031	21,729,862	10,885,311
Los Angeles	30,527	189,397,194	79,925,038	8,822	30,240,837	62,934,947	42,215,538
Riverside	5,348	35,341,006	11,480,317	8,755	6,795,858	11,218,424	12,423,157
San Diego	15,087	61,319,540	40,982,312	6,781	15,706,292	27,548,118	25,563,037
San Francisco	3,505	105,707,557	90,080,935	55,860	3,779,632	28,763,812	13,333,418
Santa Barbara	17,159	76,720,507	20,605,175	5,672	19,938,820	21,299,450	16,868,436
Santa Cruz	7,137	37,242,578	9,763,624	6,586	10,089,744	11,958,407	7,884,535
TOTAL	140,609	828,483,283	369,742,743	8,522	160,769,107	267,136,174	199,927,684
TOTAL Excluding U.C.S. F.	137,104	$722,775,726	$279,661,808	$7,312	$156,989,475	$238,372,362	$186,594,266

1987

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,412	$204,725,279	$55,898,143	$8,861	$40,136,643	$51,194,044	$43,480,511
Davis	19,842	106,014,019	51,031,250	7,915	23,814,524	23,462,671	33,284,043
Irvine	14,393	69,399,832	37,434,283	7,423	20,321,165	19,880,806	14,266,447
Los Angeles	31,499	225,903,155	84,530,493	9,855	32,366,010	54,994,032	47,689,070
Riverside	6,150	40,999,131	12,597,590	8,715	8,137,847	10,976,953	15,043,243
San Diego	15,471	82,480,165	43,358,321	8,134	17,982,684	25,776,061	26,903,302
San Francisco	3,580	120,293,175	106,628,120	63,386	4,166,389	29,748,657	16,470,568
Santa Barbara	17,018	87,447,670	22,850,476	6,481	22,163,536	16,008,696	17,736,373
Santa Cruz	8,618	37,242,578	11,290,131	5,632	11,857,258	11,438,418	8,567,187
TOTAL	145,983	974,505,004	425,618,807	9,591	180,946,056	243,480,338	223,440,744
TOTAL Excluding U.C.S. F.	142,403	$854,211,829	$318,990,687	$8,239	$176,779,667	$213,731,681	$206,970,176

Source: California Postsecondary Education Commission staff analysis of data submitted by the University on Part B of the

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the "Student Services" calculation, the total health science-related reductions from the information in Display 1 yield a 25 percent reduction in direct instruction per student and a 20 percent reduction in instructionally related costs per student.

The final step in removing the fiscal effects of health science instruction on the University was to discount the "Institutional Support" and "Plant Operation" categories for these expenditures. With the assistance of University personnel, the following method was developed to accomplish this task: First, total full-time-equivalent enrollment at the San Francisco campus was divided into total expenditures into these two categories, separately, to arrive at a cost-per-health-sciences full-time-equivalent student in both "Institutional Support" and "Plant Operation." For the 1987 fiscal year, this cost was $8,309 for "Institutional Support" and $4,600 for "Plant Operation." Health science full-time-equivalent enrollment at the remaining eight University campuses was then isolated and multiplied by the "dollars-per-health science FTE" numbers derived for the two cost categories at the San Francisco campus. This calculation provided a good approximation of the total monies spent in these two categories on health science programs. Finally, these totals were subtracted from the "Institutional Support" and "Plant Operation" categories by campus and for the University as a system in order to account completely for health science-related expenditures in the "Direct Instruction" and "Instruction Related" cost columns.

This last step of removing health science-related costs from the "Institutional Support" and "Plant Operation" categories lowered the instructionally related costs per-student costs by another 5 percent in 1987. Including this last calculation, the total health science-related refinements from the information in Display 1 yield a 25 percent reduction in the University's direct instruction costs per student and a 24 percent reduction in instructionally related costs per student.

The initial display for all nine University campuses, including health sciences expenditures, shows the University's average direct instruction cost per full-time-equivalent student as $12,265 for 1987. When health sciences program costs are not included, the direct instruction per full-time-equivalent student drops to $9,591.

Based on the calculations described thus far to remove the effects of the costs of health science instruction from the University's operating cost calculations, the per-student cost that the Commission has used for planning purposes is the 1987 fiscal year instructionally-related cost per student of $11,592 from Display 4.

The highest direct instruction costs of the eight general campuses in Display 4 were at UCLA, which had a direct instruction expenditure of $9,855 per full-time-equivalent student. The highest instructionally related costs -- $14,170 -- were at the Riverside campus. The size of its per-student costs are due at least in part to its relatively small enrollment. The largest "Instruction" and "Academic Support" budgets were found at UCLA and Berkeley, which also had by far the highest enrollment levels in the system.

The California State University

Display 5 on pages 114-115 shows the Current Fund Expenditures for the California State University for fiscal years 1986 and 1987 in the expenditure categories discussed earlier. As for the University, Commission staff examined State University fiscal data for two fiscal years in order to account for one-year fluctuations, and this section focuses on 1987 information. Direct instruction per-student expenditures at the State University that year ranged from a low of $4,189 at the Long Beach campus to a high of $5,895 at Humboldt. Unlike health-science expenditures at the University, there were no cost centers that were broken out for exclusion from this examination of State University fiscal data.

Examining campus-by-campus cost information in the State University provides wide range cost profiles due to the large variety of campuses in the system. Focusing on the fiscal data from 1987, significant economies of scale appear to be at work at the Long Beach campus, which at 24,187 full-time-equivalent students and a cost for direct instruction of $4,189 had the second highest full-time-equivalent enrollment levels and lowest direct instruction cost per student in the entire State University system. Little cost consistency is found in the State University's more rural campus; Humboldt State had a direct instruction expenditure of $5,895 -- the highest

(text continued on page 116)

the University of California, with Health Sciences-Related "Instruction" and "Academic Support"

Instruction Related Costs per Student	Research	Public Service	Scholarship Unrestrict.	Scholarship Restricted	Scholarship Transfers	Grand Total
$12,927	$130,365,251	$37,349,040	$7,778,992	$27,244,183	$3,227,055	$580,835,627
10,710	102,352,054	12,861,493	2,986,225	11,068,330	1,776,248	335,523,088
8,695	41,382,348	5,085,946	2,610,580	7,443,970	4,929,293	181,033,039
13,258	151,030,052	26,646,423	10,781,233	26,371,673	8,757,863	628,300,798
14,446	36,750,931	629,837	1,112,612	2,932,540	384,140	119,068,822
11,342	130,438,466	5,674,093	3,583,749	12,107,690	5,822,714	328,746,011
68,949	126,223,154	11,006,180	1,542,768	12,347,705	7,710,195	400,495,356
9,058	30,620,641	3,137,131	3,336,176	8,341,480	788,844	201,656,660
10,780	16,438,538	1,701,048	1,578,928	5,231,085	129,211	102,017,698
12,987	765,601,435	104,091,191	35,311,263	113,088,656	33,525,563	2,877,677,099
$11,556	$639,378,281	$93,085,011	$33,768,495	$100,740,951	$25,815,368	$2,477,181,743

Instruction Related Costs per Student	Research	Public Service	Scholarship Unrestrict.	Scholarship Restricted	Scholarship Transfers	Grand Total
$13,445	$146,838,927	$23,530,481	$7,255,134	$31,339,127	$13,554,897	$617,953,186
11,975	118,955,205	14,629,811	3,279,494	12,969,117	21,081,019	408,521,153
11,207	46,809,392	4,436,501	3,167,742	9,554,630	16,071,759	241,342,557
14,143	176,829,024	12,438,146	9,266,346	29,703,471	58,835,074	732,554,821
14,269	40,157,854	424,227	1,224,301	3,754,919	1,872,156	135,188,221
12,701	147,843,749	2,773,414	3,947,263	15,265,927	27,080,039	393,410,925
77,460	151,226,334	4,673,943	1,374,260	14,608,760	40,830,738	490,020,944
9,767	37,539,858	1,505,154	3,171,096	10,171,222	1,120,511	219,714,592
9,329	18,613,808	937,634	1,255,975	6,492,927	473,577	108,169,493
14,029	884,814,151	65,349,311	33,941,611	133,860,100	180,919,770	3,346,875,892
$12,434	$733,587,817	$60,675,368	$32,567,351	$119,251,340	$140,089,032	$2,856,854,948

annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

DISPLAY 3 *Current Fund Educational and General Expenditures and Transfers for Campuses of Expenditures Excluded and with "Student Services" Health Sciences-Related Expendi-*

1986

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,000	$189,382,754	$51,760,890	$8,315	$34,894,837	$54,846,765	$40,686,041
Davis	19,093	88,004,859	39,271,042	6,666	20,665,227	23,152,080	26,418,171
Irvine	13,753	45,367,288	25,873,410	5,180	14,608,910	20,187,534	10,112,701
Los Angeles	30,527	189,397,194	79,925,038	8,822	26,940,612	56,066,768	37,608,497
Riverside	5,348	35,341,006	11,480,317	8,755	6,736,576	11,120,563	12,314,787
San Diego	15,087	61,319,540	40,982,312	6,781	14,666,441	25,724,267	23,870,611
San Francisco	3,505	105,707,557	90,080,935	55,860	3,779,632	28,763,812	13,333,418
Santa Barbara	17,159	76,720,507	20,605,175	5,672	19,938,820	21,299,450	16,868,436
Santa Cruz	7,137	37,242,578	9,763,624	6,586	10,089,744	11,958,407	7,884,535
TOTAL	140,609	828,483,283	369,742,743	8,522	152,320,799	253,119,646	189,097,197
TOTAL Excluding U.C.S. F.	137,104	$722,775,726	$279,661,808	$7,312	$148,541,167	$224,355,834	$175,763,779

1987

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,412	$204,725,279	$55,898,143	$8,861	$39,115,723	$49,891,866	$42,374,536
Davis	19,842	106,014,019	51,031,250	7,915	21,770,293	21,448,643	30,426,952
Irvine	14,393	69,399,832	37,434,283	7,423	18,868,305	18,459,430	13,246,469
Los Angeles	31,499	225,903,155	84,530,493	9,855	28,968,057	49,220,471	42,682,422
Riverside	6,150	40,999,131	12,597,590	8,715	8,081,278	10,900,648	14,938,672
San Diego	15,471	82,480,165	43,358,321	8,134	16,790,555	24,067,284	25,119,796
San Francisco	3,580	120,293,175	106,628,120	63,386	4,166,389	29,748,657	16,470,568
Santa Barbara	17,018	87,447,670	22,850,476	6,481	22,163,536	16,008,696	17,736,373
Santa Cruz	8,618	37,242,578	11,290,131	5,632	11,857,258	11,438,418	8,567,187
TOTAL	145,983	974,505,004	425,618,807	9,591	171,781,394	231,184,114	211,562,975
TOTAL Excluding U.C.S. F.	142,403	$854,211,829	$318,990,687	$8,239	$167,615,005	$201,435,457	$195,092,407

Source: California Postsecondary Education Commission staff analysis of data submitted by the University on Part B of the

the University of California, with Health Sciences-Related "Instruction" and "Academic Support" tures Discounted, Fiscal Years 1986 and 1987

Instruction Related Costs per Student	Research	Public Service	Scholarship Unrestrict.	Scholarship Restricted	Scholarship Transfers	Grand Total
$12,813	$130,365,251	$37,349,040	$7,778,992	$27,244,183	$3,227,055	$577,535,808
10,345	102,352,054	12,861,493	2,986,225	11,068,330	1,776,248	328,555,729
8,445	41,382,348	5,085,946	2,610,580	7,443,970	4,929,293	177,601,980
12,774	151,030,052	26,646,423	10,781,233	26,371,673	8,757,863	613,525,353
14,397	36,750,931	629,837	1,112,612	2,932,540	384,140	118,803,309
11,040	130,438,466	5,674,093	3,583,749	12,107,690	5,822,714	324,189,883
68,949	126,223,154	11,006,180	1,542,768	12,347,705	7,710,195	400,495,356
9,058	30,620,641	3,137,131	3,336,176	8,341,480	788,844	201,656,660
10,780	16,438,538	1,701,048	1,578,928	5,231,085	129,211	102,017,698
12,750	765,601,435	104,091,191	35,311,263	113,088,656	33,525,563	2,844,381,776
$11,313	$639,378,281	$93,085,011	$33,768,495	$100,740,951	$25,815,368	$2,443,886,420

Instruction Related Costs per Student	Research	Public Service	Scholarship Unrestrict.	Scholarship Restricted	Scholarship Transfers	Grand Total
$13,328	$146,838,927	$23,530,481	$7,255,134	$31,339,127	$13,554,897	$614,524,113
11,626	118,955,205	14,629,811	3,279,494	12,969,117	21,081,019	401,605,804
10,936	46,809,392	4,436,501	3,167,742	9,554,630	16,071,759	237,448,343
13,693	176,829,024	12,438,146	9,266,346	29,703,471	58,835,074	718,376,659
14,230	40,157,854	424,227	1,224,301	3,754,919	1,872,156	134,950,777
12,398	147,843,749	2,773,414	3,947,263	15,265,927	27,080,039	388,726,513
77,460	151,226,334	4,673,943	1,374,260	14,608,760	40,830,738	490,020,944
9,767	37,539,858	1,505,154	3,171,096	10,171,222	1,120,511	219,714,592
9,329	18,613,808	937,634	1,255,975	6,492,927	473,577	108,169,493
13,801	884,814,151	65,349,311	33,941,611	133,860,100	180,919,770	3,313,537,237
$12,200	$733,587,817	$60,675,368	$32,567,351	$119,251,340	$140,089,032	$2,823,516,293

annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

DISPLAY 4 *Current Fund Educational and General Expenditures and Transfers for Campuses of Instruction and Administrative Categories Discounted, Fiscal Years 1986 and 1987*

1986

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,000	$189,382,754	$51,760,890	$8,315	$34,894,837	$50,210,811	$38,923,179
Davis	19,093	88,004,859	39,271,042	6,666	20,665,227	9,905,639	21,833,863
Irvine	13,753	45,367,288	25,873,410	5,180	14,608,910	13,104,822	6,887,188
Los Angeles	30,527	189,397,194	79,925,038	8,822	26,940,612	32,242,606	27,988,153
Riverside	5,348	35,341,006	11,480,317	8,755	6,736,576	10,832,718	12,244,364
San Diego	15,087	61,319,540	40,982,312	6,781	14,666,441	18,767,154	21,492,635
San Francisco	3,505	105,707,557	90,080,935	55,860	3,779,632	28,763,812	13,333,418
Santa Barbara	17,159	76,720,507	20,605,175	5,672	19,938,820	21,299,450	16,868,436
Santa Cruz	7,137	37,242,578	9,763,624	6,586	10,089,744	11,958,407	7,884,535
TOTAL	140,609	828,483,283	369,742,743	8,522	152,320,799	197,085,419	167,455,771
TOTAL Excluding U.C.S. F.	137,104	$722,775,726	$279,661,808	$7,312	$148,541,167	$168,321,607	$154,122,353

1987

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Berkeley	29,412	$204,725,279	$55,898,143	$8,861	$39,115,723	$44,812,209	$39,947,160
Davis	19,842	106,014,019	51,031,250	7,915	21,770,293	7,981,736	24,712,907
Irvine	14,393	69,399,832	37,434,283	7,423	18,868,305	10,582,273	9,118,244
Los Angeles	31,499	225,903,155	84,530,493	9,855	28,968,057	24,289,762	30,689,420
Riverside	6,150	40,999,131	12,597,590	8,715	8,081,278	10,619,637	14,845,412
San Diego	15,471	82,480,165	43,358,321	8,134	16,790,555	16,652,032	21,851,714
San Francisco	3,580	120,293,175	106,628,120	63,386	4,166,389	29,748,657	16,470,568
Santa Barbara	17,018	87,447,670	22,850,476	6,481	22,163,536	16,008,696	17,736,373
Santa Cruz	8,618	37,242,578	11,290,131	5,632	11,857,258	11,438,418	8,567,187
TOTAL	145,983	974,505,004	425,618,807	9,591	171,781,394	172,133,419	183,938,985
TOTAL Excluding U.C.S. F.	142,403	$854,211,829	$318,990,687	$8,239	$167,615,005	$142,384,762	$167,468,417

Source: California Postsecondary Education Commission staff analysis of data submitted by the University on Part B of the

the University of California, with Health Sciences-Related Expenditues Excluded from the Direct

Instruction Related Costs per Student		Public	Scholarship			Grand
	Research	Service	Unrestrict.	Restricted	Transfers	Total
$12,592	$130,365,251	$37,349,040	$7,778,992	$27,244,183	$3,227,055	$571,136,992
9,411	102,352,054	12,861,493	2,986,225	11,068,330	1,776,248	310,724,980
7,696	41,382,348	5,085,946	2,610,580	7,443,970	4,929,293	167,293,755
11,678	151,030,052	26,646,423	10,781,233	26,371,673	8,757,863	580,080,847
14,330	36,750,931	629,837	1,112,612	2,932,540	384,140	118,445,041
10,421	130,438,466	5,674,093	3,583,749	12,107,690	5,822,714	314,854,794
68,949	126,223,154	11,006,180	1,542,768	12,347,705	7,710,195	400,495,356
9,058	30,620,641	3,137,131	3,336,176	8,341,480	788,844	201,656,660
10,780	16,438,538	1,701,048	1,578,928	5,231,085	129,211	102,017,698
12,198	765,601,435	104,091,191	35,311,263	113,088,656	33,525,563	2,766,706,123
$10,747	$639,378,281	$93,085,011	$33,768,495	$100,740,951	$25,815,368	$2,366,210,767

Instruction Related Costs per Student		Public	Scholarship			Grand
	Research	Service	Unrestrict.	Restricted	Transfers	Total
$13,073	$146,838,927	$23,530,481	$7,255,134	$31,339,127	$13,554,897	$607,017,080
10,660	118,955,205	14,629,811	3,279,494	12,969,117	21,081,019	382,424,851
10,102	46,809,392	4,436,501	3,167,742	9,554,630	16,071,759	225,442,962
12,520	176,829,024	12,438,146	9,266,346	29,703,471	58,835,074	681,452,947
14,170	40,157,854	424,227	1,224,301	3,754,919	1,872,156	134,576,505
11,708	147,843,749	2,773,414	3,947,263	15,265,927	27,080,039	378,043,179
77,460	151,226,334	4,673,943	1,374,260	14,608,760	40,830,738	490,020,944
9,767	37,539,858	1,505,154	3,171,096	10,171,222	1,120,511	219,714,592
9,329	18,613,808	937,634	1,255,975	6,492,927	473,577	108,169,493
13,207	884,814,151	65,349,311	33,941,611	133,860,100	180,919,770	3,226,862,553
$11,592	$733,587,817	$60,675,368	$32,567,351	$119,251,340	$140,089,032	$2,736,841,609

annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

DISPLAY 5 *Current Fund Educational and General Expenditures and Transfers for the California*

1986

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Bakersfield	3,033	$13,275,246	$4,737,405	$5,939	$2,607,317	$8,324,337	$2,001,169
Chico	13,026	48,329,376	9,430,204	4,434	9,874,994	19,587,647	5,148,395
Dominguez Hills	4,899	21,122,168	4,191,283	5,167	4,541,953	12,625,737	2,616,802
Fresno	14,542	57,208,768	9,000,495	4,553	9,300,741	23,016,668	5,105,530
Fullerton	16,698	55,249,186	9,801,133	3,896	11,751,499	27,112,418	4,832,961
Hayward	9,720	36,837,420	7,035,470	4,514	6,783,812	15,944,826	4,316,840
Humboldt	5,290	26,286,777	5,685,800	6,044	6,487,205	12,086,457	3,824,577
Long Beach	23,562	73,609,006	10,473,287	3,569	17,307,580	26,887,206	11,331,671
Los Angeles	16,656	63,001,378	8,492,699	4,292	11,508,891	27,992,486	4,751,974
Northridge	20,903	68,545,442	11,438,537	3,826	13,065,329	35,888,186	4,185,087
Pomona	14,966	53,012,410	8,486,705	4,109	10,001,254	24,884,202	5,052,240
Sacramento	17,758	65,109,989	10,015,049	4,230	11,281,264	24,600,125	5,414,344
San Bernardino	5,346	18,462,655	3,957,522	4,194	3,894,541	11,847,117	1,164,249
San Diego	26,219	97,298,155	18,717,483	4,425	18,519,520	43,244,401	8,910,404
San Francisco	18,737	67,153,044	10,324,908	4,135	14,352,388	25,577,277	5,011,048
San Jose	19,090	70,245,054	13,447,138	4,384	17,209,476	32,969,322	7,038,568
San Luis Obisp	15,174	60,534,110	11,603,632	4,754	12,421,914	26,633,667	5,931,570
Sonoma	4,320	19,058,782	4,484,245	5,450	5,156,708	10,658,519	2,543,293
Stanislaus	3,392	13,477,401	3,565,195	5,024	2,297,000	8,044,031	1,781,542
TOTAL	253,331	$927,816,367	$164,888,190	$4,313	$188,363,386	$417,924,629	$90,962,264

1987

Campus	FTE Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
Bakersfield	3,312	$15,580,259	$3,499,491	$5,761	$3,697,679	$5,491,974	$3,111,195
Chico	13,331	56,607,012	8,353,133	4,873	13,387,312	11,245,654	7,664,747
Dominguez Hills	5,093	24,358,104	4,330,175	5,633	4,589,616	8,212,739	4,173,767
Fresno	14,916	67,789,363	10,426,547	5,244	11,325,020	14,315,209	8,647,345
Fullerton	16,811	62,973,141	9,596,295	4,317	9,791,944	14,650,075	8,136,140
Hayward	9,749	41,069,358	7,484,850	4,980	6,295,160	9,976,585	5,962,276
Humboldt	5,637	27,682,263	5,546,702	5,895	6,779,822	8,513,437	5,244,396
Long Beach	24,187	89,104,896	12,212,225	4,189	20,795,902	21,463,034	12,399,835
Los Angeles	15,549	64,507,260	8,966,909	4,725	12,086,510	15,131,470	8,825,463
Northridge	20,843	80,181,280	11,818,438	4,414	12,653,276	16,362,952	9,397,770
Pomona	15,500	62,290,895	8,814,614	4,587	11,408,088	12,644,745	8,986,367
Sacramento	17,945	73,682,406	10,504,283	4,691	12,160,121	14,133,114	7,407,541
San Bernardino	6,095	23,774,430	4,648,940	4,663	4,385,727	7,989,822	3,962,914
San Diego	26,819	104,849,608	19,318,821	4,630	17,303,802	20,807,132	12,964,102
San Francisco	19,141	74,178,083	11,721,472	4,488	16,337,117	15,762,477	9,293,844
San Jose	19,470	81,055,719	12,026,665	4,781	15,915,335	18,139,278	10,910,407
San Luis Obisp	15,480	70,901,367	11,283,216	5,309	11,418,848	13,233,952	9,209,065
Sonoma	4,592	21,288,599	3,782,587	5,460	4,481,299	6,393,162	4,059,683
Stanislaus	3,541	15,876,950	3,362,246	5,433	3,429,218	5,734,193	2,981,755
TOTAL	258,011	$1,057,750,993	$167,697,609	$4,750	$198,241,796	$240,201,004	$143,338,612

Source: California Postsecondary Education Commission staff analysis of data submitted by the State University on Part B of the

State University, Fiscal Years 1986 and 1987

Instruction Related Costs per Student	Research	Public Service	Scholarship			Grand Total
			Unrestrict.	Restricted	Transfers	
$10,203	$167,571	$66,066	$0	$866,026	$172,269	$32,217,406
7,091	787,437	2,918,897	0	3,826,630	1,254,330	101,157,910
9,206	1,050,674	704,167	0	1,378,338	227,187	48,458,309
7,126	797,976	1,545,801	765,527	4,729,626	713,185	112,184,317
6,513	751,350	51,781	0	5,460,021	27,388	115,037,737
7,296	846,042	0	0	1,465,989	824,003	74,054,402
10,278	807,962	229,696	12,502	2,390,817	1,389,181	59,200,974
5,925	2,194,195	1,872,148	0	5,291,390	0	148,966,483
6,949	1,790,041	1,160,383	64,639	3,816,854	1,410,328	123,989,673
6,369	0	0	0	4,692,539	1,220,853	139,035,973
6,778	429,555	1,897,223	0	3,349,155	707,307	107,820,051
6,556	122,267	4,341,694	0	5,015,497	571,644	126,471,873
7,356	0	59,737	0	2,329,433	212,796	41,928,050
7,120	9,420,655	7,443,851	0	5,705,299	1,132,417	210,392,185
6,534	1,592,005	1,673,558	0	4,538,812	2,176,238	132,399,278
7,381	4,386,741	775,297	0	4,181,862	2,079,694	152,333,152
7,719	2,663,107	0	0	4,391,057	744,678	124,923,735
9,699	25,140	398,094	19,549	1,202,070	0	43,546,400
8,598	53,307	2,410	99,202	765,597	133,684	30,219,369
$7,066	$27,886,025	$25,140,803	$961,419	$65,397,012	$14,997,182	$1,924,337,277

Instruction Related Costs per Student	Research	Public Service	Scholarship			Grand Total
			Unrestrict.	Restricted	Transfers	
$9,475	$0	$0	$0	$955,041	$2,893	$32,338,532
7,296	0	0	0	4,376,231	19	101,634,108
8,966	0	0	0	1,421,708	451,988	47,538,097
7,542	0	0	0	4,116,544	0	116,620,028
6,255	0	0	0	3,118,648	5	108,266,248
7,261	0	0	0	1,652,342	244,140	72,684,711
9,538	0	0	0	2,596,375	33	56,363,028
6,449	0	0	0	6,295,049	24,310	162,295,251
7,043	0	0	0	4,397,766	378	113,915,756
6,257	0	0	0	5,203,442	600,000	136,217,158
6,719	0	0	0	4,031,493	219	108,176,421
6,569	0	0	0	4,667,099	93	122,554,657
7,344	0	0	0	1,483,937	0	46,245,770
6,534	0	1,185,044	0	6,078,822	0	182,507,331
6,650	0	0	0	5,313,866	0	132,606,859
7,090	0	0	0	5,395,790	54,478	143,497,672
7,497	0	0	0	5,482,034	0	121,528,482
8,712	0	0	0	1,432,002	0	41,437,332
8,863	0	0	0	932,858	0	32,317,220
$7,004	$0	$1,185,044	$68,951,047	$70,329,603	$699,549	$1,878,744,661

annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

in the system -- while Chico's per-student direct-instruction cost was $4,873, which was only $123 above the average systemwide per-student cost for direct instruction in the 19 State University campuses studied.

State University campuses in typically high-cost areas of the State, such as San Diego, Los Angeles, Long Beach, and San Francisco, all have direct instruction costs and instructionally related costs below the average for the system; this is perhaps a function of their large enrollments and economies of scale. For the 1987 fiscal year, the Instructionally Related Costs per student (that is, the number comparable to the $11,592 for the University) is $7,004.

California Community Colleges

Display 6 below shows the cost calculations for current operations in the California Community Colleges for the 1986 and 1987 fiscal years. The direct instruction costs for the community colleges in fiscal year 87 were $1,811 per student, while the instructionally related costs were $3,071. Due to the level of instruction (exclusively lower-division) provided in the community colleges, and the methods of instruction employed (mostly classroom lecture and laboratory), the per-student instructionally related costs for the community college system are substantially lower than at the University and State University ($11,592 and $7,004, respectively).

Unfortunately, there is little additional fiscal data available on operating costs in individual community colleges of the type needed for this study (e.g., by size and location of campuses, by program emphasis, by ratio of academic to vocational course offerings, etc.). In later research, Commission staff will attempt to obtain and more closely examine expenditure data in the cost categories covered in this study

Summary

This paper has presented calculations of operating costs that are driven, both directly and indirectly, by changes in the numbers of students for the University of California, the California State Universi-

DISPLAY 6 Current Fund Educational and General Expenditures and Transfers for the California Community Colleges, Fiscal Years 1987 and 1986

Campus	ADA Enrollment	Instruction	Academic Support	Direct Instruction per Student	Student Services	Institutional Support	Plant Operation
TOTAL 1987	560,192	$856,263,380	$158,425,249	$1,811	$182,215,330	$335,828,197	$187,341,079
TOTAL 1986	685,031	$981,288,121	$191,951,332	$1,713	$199,241,379	$267,342,799	$223,765,929

				Scholarship			
Campus	Instruction Related Costs per Student	Research	Public Service	Unrestrict.	Restricted	Transfers	Grand Total
TOTAL 1987	$3,071						
TOTAL 1986	$2,720	$1,711,698	$36,816,369	$1,385,839	$86,121,985	$20,443,987	$2,010,069,438

Note: The following 15 community college districts out of the 70 existing in 1987 are not included: Chaffey, Coachella Valley, Coast, Compton, Gavilan, Redwoods, Saddleback, San Bernardino, Santa Monica, Sierra Joint, Siskiyou, South County, Ventura, West Hills, and Yuba.

Source: California Postsecondary Education Commission staff analysis of data submitted by the California Community Colleges on the annual federal Department of Education IPEDS finance report on total amount of current funds expenditures and transfers.

ty and the California Community College Systems. It explained the fiscal information and methodologies used to calculate the direct instructional costs and instructionally related costs per student and what these calculations are meant to show.

The direct instruction and instructionally related costs determined in this study for the three public segments appear appropriate to initiate discussions on what levels of operating costs should be expected when planning for expanded public postsecondary facilities in California. Though future refinements to some of these calculations may be necessary, the cost relationships developed here are accurate enough to be at least relatively close to whatever final estimates of operating costs are developed for planning the expansion of the public sector of postsecondary education in California.

4

Issues Related to Year-Round College and University Operation

Introduction

A perennial issue facing postsecondary planners is whether the State should, as a policy matter, promote more efficient use of existing space through summer-quarter instruction. Because past experiments with summer-quarter instruction have been generally unsuccessful, many believe the idea is unworkable. It is, however, incumbent on the Postsecondary Education Commission to revisit the area, to explore whether it can work, whether the savings or program benefits justify it, and whether the Commission should recommend year-round operation as a policy matter to the segments, the Governor, and the Legislature.

Differences between summer-quarter and summer-term instruction

"Summer-quarter" instruction is different from "summer-term" instruction: the former is generally part of "year-round operation," with full-State funding of instruction in all terms; the latter is non-State-funded instruction funded with higher student fees charged to defray instructional costs. At the present time, all UC and CSU campuses operate summer-term instruction -- that is not funded by the State. While there is a wide variation between the campuses in summer-term activities, typically there are some offerings of courses -- both requirements and electives -- for credit, as well as extension or other non-credit instruction. Summer terms are also used for special intensive instructional programs, such as remedial courses offered to students in need of special help and residential programs for high school students or other populations. Student fees for summer-term courses are set to cover the full costs of operating the classes.

Current summer-quarter programs

Four CSU campuses -- Los Angeles, San Luis Obispo, Pomona, and Hayward -- now offer State-supported summer instruction. In addition, Humboldt State University offers a special summer arts program. Enrollments during the summer at these campuses tend to be well below those in the other three terms. Both CSU Los Angeles and CSU Hayward maintain close to one-fifth of total enrollments in the summer quarter; but at Pomona and San Luis Obispo, summer-quarter enrollments are below 10 percent. Because these enrollments are lower than for the rest of the year, the relative cost to the State for summer-quarter enrollments is higher than regular instruction. The majority of summer-quarter students on all campuses are enrolled for six or more course units, suggesting that students are doing more than picking up a single class.

The State's history with year-long operation

Although academic calendars in the United States have historically operated on nine- or ten-month schedules, academic calendars designed to use the full calendar year are by no means a recent development. For example, Harvard University operated from 1638 to 1801 on a four-term (quarter system) calendar, and from 1801 to 1839 on a three-term (trimester) system.

In California, the 1955 *Restudy of the Needs for California Higher Education* (McConnell, Holy, and Semans, p. 319) included a proposal to increase plant utilization by moving to year-round operation, either on the four-quarter or trimester system. This policy was reaffirmed in 1960 by the Master Plan Survey Team, which recommended "the adoption of a system or other means which would allow an equal distribution of students throughout the whole calendar year and thereby make full use of existing facilities" (p. 59). Stimulated by analyses that concluded potentially large capital outlay savings from year-round operations, both the Department of Finance and the Legislative Analyst urged segmental planning to include year-round operations. In June 1963, the Coordinating Council for Higher Education (CCHE) undertook an intersegmental study of year-round operations. By 1963, the University of California Regents had adopted a policy to establish year-round operation at the earliest possible date, preferably through the quarter system; in early 1964, the State University Board of Trustees took similar action. This was followed shortly by a recommendation from the Coordinating Council for the State to fund year-round operations through the four-quarter calendar. The Council resolution was based on the following assumptions:

1. The cost savings from year-round operations occur when enrollments among the different sessions are entirely balanced;
2. Capital outlay savings from full utilization of the summer term would be substantial;
3. These capital outlay savings would be offset by increased operating costs in the summer quarter; full-year balanced enrollments were a necessary condition to contain these operating costs;
4. There would be one-time conversion costs to year-round operation, as well as continuing operating increases from the increased "cycling" costs of another admissions/matriculation process.

Implementation of the policy goal of year-round operation came slowly. Although operating budget augmentations were provided to partially defray the one-time costs of converting from semester to quarter systems, the State was slow to provide full operating budget support in the summer quarter. In 1968, when the Proposition 3 bond measure to expand postsecondary facilities was defeated by the voters, the segments were pushed to find some way to economize on space requirements. In 1970, failure to find resources needed to expand capital outlay led to a change in classroom utilization standards, from 34 to 53 hours per week. This pressure came largely because of the failure to successfully implement year-round operations coupled with the inability of the State to fund needed capital outlay expansion. By the mid 1970s, the enrollment pressures that initially caused planners to look to year-round operations had subsided, and most capital outlay appropriations were transferred from new capacity space to renovation, repair, and new program costs. Although this situation continues at present, enrollment expansion is once again causing State planners to look at year-round operations as a possibility.

A number of evaluations of year-round operations were conducted during the past 20 years. The perennial finding of these various studies were:

1. Neither students nor faculty were universally enthusiastic about summer-quarter instruction. Thus, actual summer-quarter enrollments never met the projections, and the operating costs of the summer session were close to three times higher than the rest of the term. These high operating costs kept the State from fully funding the summer quarter, thereby strengthening the argument against successful year-round operation.
2. Year-round operation tended to work better -- e.g., draw more students -- in urban, commute campuses than in residential campuses. In general, this meant that it was more successful on some State University campuses than in the University of California.
3. Students who wanted to accelerate the pace of their college education continued to endorse year-round operation.

The fiscal impact of year-round operation

A number of studies of the hypothetical fiscal effect of year-round operation have been conducted over the years. These studies generally concluded that year-round operations force a more efficient use of space resources, thus resulting in capital outlay savings by reducing pressure to build new buildings. These capital outlay savings are at least partially offset by increased operating costs, associated with the higher cost of instruction in the summer quarter.

An analytic model to evaluate the question of the savings and costs of year-round operation was developed recently by Frank Jewett, director of the Planning for Growth project for the California State University. While that study does not reach policy conclusions for or against year-round operations, it is a recent effort to examine the fiscal questions about year-round operations that is useful for this current discussion. There are four components in his evaluation:

1. Year-round operation promotes a more efficient use of facilities and reductions in capital outlay expenditures in growth situations where additional facilities are needed. These reductions are measured theoretically as the difference between the facilities needed to accommodate a given amount of growth with and without year-round operation. When facilities are used more intensively, the need to construct facilities to accommodate any given level of full-time-equivalent enrollment is reduced, with savings equaling the cost of facilities that are not built. The effect is to make the capital outlay budget smaller than it otherwise would have been. The savings are distributed over a period of years as full-time-equivalent enrollment grows. (The capital outlay budget grows but at a lower rate than if summer-quarter instruction had not been implemented.)
2. The *additional costs* of operating year round must be estimated and deducted from the estimated savings in Paragraph 1 above. Some of the costs will appear in the support budget. These costs should not be confused with the regular costs of instructing a full-time-equivalent enrollment which would occur anyway. The additional budget costs of the summer quarter are in the support budget permanently.
3. The third component is less precise than the first two. Campuses without a summer quarter run summer sessions for regularly matriculated students as part of their summer session. To the extent that the State-supported summer quarter displaces existing instruction in summer session, the State is paying for instruction that would have otherwise been paid for by the students. There is a commensurate increase in the budget without an increase in full-time equivalent enrollment.
4. If a semester campus converts to the quarter system before converting to year-round operation, this cost too must be added. Such a conversion represents a major effort that requires a review and revision of the campus' entire curriculum including degree programs, credential programs, and general education. This is an initial cost that must be incurred at least one or two years before the summer quarter begins. Based on the cost of converting California State University, Los Angeles to the quarter system in the 1960s, it would cost $1.6 million per campus in today's dollars for such a conversion.

Both the benefits (cost savings) and costs (additional expenses and summer session reductions) occur prospectively over a period of years. To make them comparable they are discounted to the present time period, i.e., the present values of the benefits and costs are calculated. The difference between the present value of the benefits and the costs is the net present value of the project. A positive net present value indicates a feasible project in the sense that if one borrowed money today at the discount rate, the loan could be repaid and there would be a surplus. The feasibility criterion holds for internally generated funds also. The question then becomes whether to lend the funds at the discount rate or use them to do the project.

The model allows hypothetical costs and savings to be generated under various scenarios of costs and enrollments. For instance, it calculates the potential savings in capital outlay costs to add facilities for 15,000 full-time-equivalent enrollments if there is full use of the summer quarter -- e.g., summer enrollments are one-quarter of total-year enrollments. If summer quarter operations are less, then the savings go down. To these possible savings are added increased operating costs of the summer quarter at various enrollment levels, as well as the loss of revenue from the displacement of full-fee funded courses, and the one-time conversion costs of going from three to four-term operations. The net result of the calculations is that year-round operation can result in a net cost to the State if enrollments of the summer quarter are not maintained at close to parity with the three other terms.

Programmatic benefits and costs of year-round operation

Other non-economic factors associated with year-round operation should be considered. One of the most attractive features of year-round operation is that it can give students an opportunity to accelerate progress to their degree. Although students and their families can take advantage of summer-term courses to make such progress now, they must pay higher fees for this opportunity. Another potential benefit from year-round operation is that the opportunity to teach in the summer quarter can be used as a recruitment device for new faculty -- since summer-quarter instruction should mean a pay increase for these individuals. Mandated summer-quarter instruction could have a negative effect on recruitment, on the other hand, since most of the institutions with whom California's public institutions compete for faculty do not have mandated summer-term instruction. Studies done of the effect of year-round operation in the public schools suggest that there are significant academic benefits to students from instruction throughout the year. In addition, there is some evidence that year-round operation lessens juvenile delinquency. Whether these benefits in the elementary and secondary setting apply as well to the postsecondary environment is a debatable point.

A number of operational hurdles associated with year-round operation must be overcome for it to be attractive. While some of these problems could potentially be solved, others are more stubborn:

1. Year-round operations increase campus crowding, since many faculty and students remain on campus during the summer doing research unrelated to summer session. In a year-round mode, this activity would continue, but it would be an addition to each quarter's population. For campuses in communities concerned about growth, year-round operations might not be feasible.
2. Students are also concerned about the general decline in the quality of student life and additional stress that might accompany year-round study.
3. Students who attend year round lose opportunities for summer employment. In addition, many student aid programs have caps on the amount of aid students can receive in a year. Adding a term of attendance may mean additional student costs without increased aid.
4. Plant maintenance schedules are dependent on current calendar and size. Year-round operations would disrupt these schedules and have important consequences for the maintenance of the physical plant. Costs would rise, even without new space. Expanded use of the current physical plant would incur higher utility bills and create additional wear and tear, requiring more frequent maintenance and replacement of major equipment.

Conclusions

Several conclusions emerge from this analysis, all of which suggest that year-round operation might not be a good policy option for the State of California to follow. To summarize, they are:

1. The most powerful arguments for year-round operation in the postsecondary environment are fiscal and not academic. Year-round operations can lead to some capital outlay savings *IF* summer term enrollments equal those throughout the rest of the year. This State's history with year-round operations suggests that students do not enroll in equal numbers in the summer quarter. For the savings to occur, summer quarter attendance would have to be mandatory.
2. The savings are from the capital outlay budget -- which under current practice is funded from sources wholly separate from the operating budget. On the operating budget side, costs actually go up in perpetuity. Although there can be capital outlay savings that outweigh operating budget costs, these kinds of trade-offs are hypothetical, since these are two different budgets, one generally supported with direct appropriations of taxes, the other through bonds. The political opportunity costs of an increase in an operating budget expenditure may outweigh the real savings to the taxpayer from long-term reduction in capital outlay costs.
3. There can be programmatic benefits from year-round operation that are advantageous in certain programs or campuses and with some students.

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5

The Role of Accredited Independent Institutions in Meeting California's Future Enrollment Demand

Introduction

In the past, statewide planning for postsecondary education in California has overwhelmingly focused on *public* postsecondary education. To the extent that planning has been extended to private postsecondary education, it has centered on financial aid and the role of aid in providing student access to regionally accredited non-profit postsecondary education.

Until the 1987 review of the Master Plan, the subject of independent postsecondary education was not a focus of State planning, perhaps largely because so much of State policy and planning regarding postsecondary education centers around budgetary issues, and the State Constitution prohibits direct State support to private institutions under Article IX, Section 8, as does Article XVI, Section 3. In part because of this constitutional prohibition, as well as for other reasons, the State has chosen to provide independent institutions support attached to students in the form of State financial aid, rather than directly to the institutions. The policy goal of the State's financial aid programs has always been two-fold, to provide students with both "access" to postsecondary education and the opportunity to choose which institution to attend. It is thus the student consumer, rather than the State, who is the operative determinant of the distribution of financial aid resources, and the State has historically resisted changing that policy to recognize or make explicit an obligation to assist specific independent institutions.

In its final report, the Commission for the Review of the Master Plan for Higher Education acknowledged the relative silence of State planning with respect to independent postsecondary education, while calling for more explicit attention to the accredited independent institutions as a significant piece of the total educational system (1987, p. 3):

> The 1960 Master Plan said little about the role of postsecondary schools, colleges and universities in the accredited private sector. Since then, the accredited private sector has also grown rapidly and can no longer be left out of the plan. In the coming years, the state must acknowledge the accredited private institutions' ability to shoulder much of the increasing demand for educational services, and the accredited private institutions must be encouraged to accept that responsibility as partners in a unified enterprise.

Because of the potential ability for these institutions to contribute in easing the demand for public educational services and the need for the State to physically expand its public institutions, this background paper addresses the role these institutions can serve in California's long-range plan for postsecondary education. This paper presents information on the potential additional physical capacity -- or the additional supply of spaces for students -- available among these institutions, as well as the potential student demand for them. The material is organized as follows: first, it begins with a brief description of the accredited independent sector of postsecondary education in California, focusing on the subset of those institutions which have admissions standards comparable either to the University of California or the State University. The paper then reviews enrollment trends by segment of public and independent postsecondary education in California over the period 1975 to the present, and identifies declines in participation for the 21 independent institutions with admissions standards comparable to the University of California and at the same time that increases occurred in the University over the period 1984 to the present. No similar trade-off can be seen between the 20 independent institutions with admissions standards comparable to the State University. The relation of these enrollments to the increased tuition gap between these institutions is reviewed, and the possible impact on enrollments of increases in State grant aid to students in independent institutions is discussed.

California's private postsecondary institutions

Privately supported postsecondary education in California encompasses a wide and diverse variety of institutions. In all, over 2,300 non-State-supported postsecondary institutions operate in California -- only 15 percent of them degree granting. Of this 15 percent, less than 60 percent -- approximately 195 -- are accredited or candidates for accreditation by agencies recognized by the United States Secretary of Education. The remaining 40 percent of the degree-granting institutions operate in California under authorization or approval of the State Superintendent of Public Instruction.

Of California's 195 private accredited degree-granting institutions, 125 are accredited by its regional accrediting agency -- the Western Association of Schools and Colleges (WASC), the remainder being accredited by specialized accrediting agencies. Of these 125 regionally accredited institutions, four are proprietary (for profit). Of the remaining 121 regionally accredited, non-profit institutions, 64 are members of the Association of Independent California Colleges and Universities (AICCU) and enroll approximately 95 percent of the students who are enrolled at such institutions. Virtually all of the non-

DISPLAY 1 Independent California Institutions with Admissions Standards Comparable to Those of the University of California and the California State University

Institutions with Standards Comparable to the University of California

- California Institute of Technology
- Claremont McKenna College
- Harvey Mudd College
- Loyola Marymount University
- Mills College
- Occidental College
- Pepperdine University
- Pitzer College
- Pomona College
- St. Mary's College of California
- Santa Clara University
- Scripps College
- Stanford University
- Thomas Aquinas College
- University of Redlands
- University of San Diego
- University of San Francisco
- University of Southern California
- University of the Pacific
- Westmont College
- Whittier College

Institutions with Standards Comparable to the California State University

- Azusa Pacific University
- Biola University
- California Baptist College
- California Lutheran College
- Chapman College
- Christian Heritage College
- College of Notre Dame
- Christ College Irvine
- Dominican College
- Fresno Pacific College
- Loma Linda University
- Master's College
- Mount St. Mary's College
- Pacific Union College
- Point Loma Nazarene College
- Southern California College
- United States International University
- University of La Verne
- Woodbury University
- World College West

Source: Association of Independent California Colleges and Universities.

AICCU members are schools offering specialized instruction -- such as the Academy of Art College, American Film Institute, Brooks Institute of Photography, and the California College of Podiatric Medicine, to name a few. The majority of the AICCU institutions are comprehensive colleges and universities offering the full spectrum of academic subjects and disciplines.

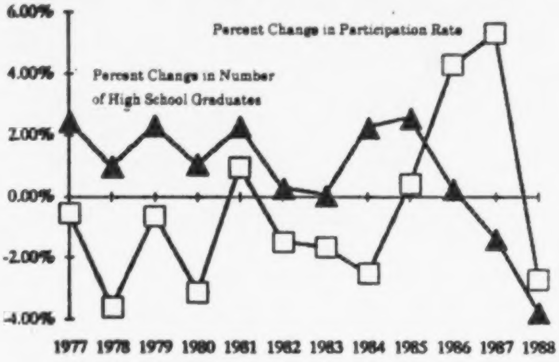
Of the 64 AICCU members, 41 have admissions standards comparable to California's public four-year institutions as evidenced by the grade-point averages and course-taking patterns of their entering students. More narrowly, 21 have admissions standards comparable to the University of California, while the remaining 20 have standards comparable more to the State University. It should be noted that these comparable institutions that are listed in Display 1 above enroll approximately 85 percent of all students enrolled in private degree-granting California colleges and universities.

Enrollment trends in the comparable institutions and factors influencing them

The enrollment of California residents in the 41 independent institutions comparable to California's public four-year colleges and universities has remained relatively constant over the period 1975 through 1988, although California resident enrollments among those institutions with admissions comparable to the University of California have declined since 1984. While enrollments at the State University-comparable institutions have fluctuated from 15,000 to 17,000 annually, with Fall 1988 enrollments at the high end of that scale, the University-comparable institutions in 1988 enrolled about 10 percent fewer Californians than they had only four years earlier.

In an effort to obtain an understanding of the factors that influence the enrollment and hence participation rates of the independent institutions, Commission staff analyzed numerous demographic and economic variables that may have played a role in this phenomena. As Display 2 indicates, the annual percentage change in the independent participation rate closely tracked the annual change in the number of high school graduates until 1983. This same demographic trend can also be seen in comparing the change in the participation rate with the change in the 18-29-year-old State population. In short, it appears that prior to 1983, the participation rate of the independents could be determined relatively accurately from the number of high school graduates or the number of 18-29 year olds. However, since 1983 that is not the case.*

DISPLAY 2 Annual Percentage Change in the Number of California High School Graduates and in the Participation Rate of California Residents in Independent Institutions Comparable to the University of California and the California State University, 1977-1988



Source: California Postsecondary Education Commission staff analysis.

After considerable analysis, the data indicate that since 1983 a number of interrelated factors influenced the independent institutions' participation rate. Primary among these factors are the tuition fees charged by these institutions and the amount of State, federal, and institutional financial aid available to attend them. Because of the complexities of the financial aid distribution system and the multiple sources from which these funds are derived, developing a clear understanding of exactly which of these factors is influencing the independents' participation rate is difficult to determine definitively.

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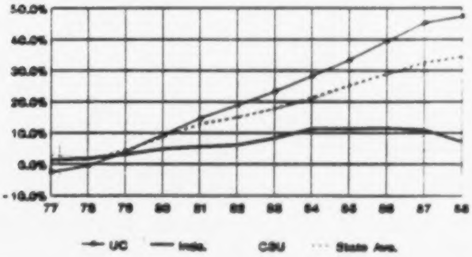
* The participation rate for each segment was developed by taking California resident enrollment in each segment and dividing by the cumulative number of California high school graduates during the previous four-year period. The statewide participation rate was developed by taking the total number of California residents enrolled in California's four higher education segments and dividing by the cumulative number of California high school graduates during the previous four-year period. The annual and indexed percentage changes were then calculated from these numbers.

The one question that the data is able to answer with a significant level of certainty is where students who would have previously attended a University-comparable independent institution are now going to obtain a higher education. Display 3 below shows that while the cumulative independent participation rate stabilized after 1983 and then began to decline in 1986, the University of California cumulative participation rate continued to increase over the entire period. Hence, this data suggests that students who would have attended a University-comparable independent institution had it been more affordable are opting to attend one of the significantly lower-cost publicly supported University of California campuses. Thus, California's University-comparable independent institutions are losing a portion of their market share to the University of California. The data do not show similar aggregate trade-offs between the State University-comparable independent institutions and State University enrollments. Although staff plan to do further research into the relation between price and enrollments for these students, at this time, the focus of the inquiry has thus been confined to the University-comparable independent institutions.

While this analysis assists in understanding the changes that have occurred in the University-comparable independent institutions' enrollment levels, it fails to answer the question of whether the number of students opting to attend such institutions would increase given an increase in the State's maximum Cal Grant A award. The following section addresses this question.

DISPLAY 3 Indexed Percentage Change in Participation Rates for California's Four-Year Postsecondary Education Segments, 1977 Through 1988



Source: California Postsecondary Education Commission staff analysis.

Impact of increases in the maximum Cal Grant A award on University-comparable independent institution enrollment levels

In 1989, the State established a policy for adjusting the maximum Cal Grant A award for students attending California's independent colleges and universities. That policy calls for the maximum grant to be equivalent to the estimated average State General Fund cost of educating a student at one of California's public four-year colleges or universities. The formula for determining the estimated average State General Fund cost includes (1) the average cost of instruction and academic support as determined by the California State University nonresident tuition methodology, plus (2) the average University and State University systemwide and campus-based fees. In 1989-90, this formula would have provided a maximum Cal Grant A award of approximately $6,200, but the State provided funding for a maximum grant no greater than $5,250. If the State were to increase its funding to provide the maximum Cal Grant A award called for by the adjustment policy, how many students would opt to attend a University-comparable independent institution rather than a public one? As noted earlier, it is difficult to answer this question with any level of certainty because of the interrelated economic factors influencing the enrollment decisions of students. However, statistical analysis assuming that past University-comparable independent enrollment trends continue suggests that the increased demand -- the number of additional students who would opt to attend -- would equal approximately 1,500 new students each year at the University-comparable independent institutions if the maximum Cal Grant A award is increased to the level called for by the adjustment policy. In developing this estimation, Commission staff conducted regression analysis which simulated the effect on enrollments if the full amount provided by the adjustment policy was the actual level of the grant award. According to this analysis and other observed enrollment patterns, it is expected that these new students would attend one of the University-comparable independent institutions rather than one of the University of California campuses. (For a discussion of the methodology used in the regression analysis, please see the methodological note on page 134.)

In summary, this analysis indicates that the need for expanding the University of California could be reduced by approximately 6,000 full-time-equivalent students per year (1,500 students multiplied by four years) by increasing the maximum Cal Grant A award and thereby utilizing current and projected capacity in the University-comparable independent institutions. The two questions that result from this finding are whether the independent institutions have sufficient capacity -- supply -- to accommodate an increase in enrollment -- demand -- should the maximum Cal Grant award be funded at the level called for by the adjustment policy, and whether it is actually cost effective for the State to encourage these students through the increased grant to attend a University-comparable independent institution rather than a public one.

Capacity available in both the University- and State University-comparable independent institutions

The Association of Independent California Colleges and Universities has surveyed its members with admissions standards comparable to those at the University and State University to determine their future expansion plans and potential available capacity -- additional supply. Display 4 on page 130 shows the additional potential available capacity -- supply -- at the University-comparable independent institutions.

The Association reports that Loyola Marymount University, Pepperdine University, Saint Mary's College of California, the University of Redlands, the University of Southern California, and the University of San Francisco each plan to expand their current enrollment by between 100 and 300 students by 1995. In all, by 1995 the independent institutions with University-comparable admissions standards plan to enroll approximately 1,300 more students than they presently do.

In addition to this expansion, these institutions may also have room for additional California residents by changing the composition of their student bodies. Over the past several years, California's accredited independent institutions have increased the number of California nonresidents they enroll -- primarily because of the declining coverage of maximum Cal Grant A awards. In 1978, Cal Grant A awards covered approximately 71 percent of their average tuition and fees, but by 1988, that percentage had declined to about 47 percent. With that decline came a marked decrease in the number of California residents that enroll in these institutions.

The Association of Independent California Colleges and Universities estimates that if these institutions return to enrolling the peak number of California residents they enrolled over the past 12 years, they will be able to accommodate an additional 6,100 California residents. Combining this change in composition with their present unutilized capacity and planned expansion means that these institutions would have the capacity -- potential additional supply -- to enroll nearly 10,500 more California resident students in 1995 than they presently do.

Moreover, these institutions are in the process of reviewing their potential expansion plans beyond 1995. They estimate that if the maximum Cal Grant award increases to the level called for by the existing adjustment policy and if other favorable market conditions exist, they would be willing and able to expand their physical capacity to accommodate an additional 3,700 students. If these expansion plans are implemented, it would bring the total potential added capacity -- additional supply -- of University-comparable independent institutions to over 14,000.

Capacity and expansion plans -- potential additional supply -- for the State University-comparable independent institutions are shown in Display 5 on page 131. As the display indicates, nearly all of the State University-comparable institutions plan to expand over the next five years. This expansion is projected to provide space to accommodate some 4,700 additional students. In addition, these institutions could also return to enrolling larger percentages of California residents which could result in space for an additional 2,000 California resident students. Combining this change in composition with their present unutilized capacity and planned expansion means that these institutions have the capacity -- potential additional supply -- to enroll

DISPLAY 4 *Potential Capacity Available at Independent Institutions with Admission Standards Comparable to the University of California*

	Fall 1988 Enrollment	Current Unused Capacity	Expansion Planned by 1995	Potential Capacity Available due to Change in Student Body Composition	Estimated Expansion Between 1995-2005 if Favorable Market Conditions Exist	Total
California Institute of Technology	854	20	0	111	0	131
Claremont McKenna College	855	8	0	86	350	444
Harvey Mudd College	540	22	38	81	0	141
Loyola Marymount University	3,630	0	180	653	200	1,033
Mills College	720	94	67	0	240	401
Occidental College	1,648	52	0	214	150	416
Pepperdine University	2,436	80	100	658	0	1,138
Pitzer College	741	8	0	37	0	45
Pomona College	1,421	0	0	242	300	542
St. Mary's College of California	2,360	437	250	71	0	758
Santa Clara University	3,638	0	0	655	300	955
Scripps College	603	0	0	30	100	130
Stanford University	6,462	176	0	646	0	822
Thomas Aquinas College	150	0	50	5	50	105
University of Redlands	2,391	85	250	406	200	941
University of San Diego	3,477	0	0	417	100	517
University of San Francisco	3,844	117	100	346	750	1,313
University of Southern California	14,466	816	306	1,157	500	2,779
University of the Pacific	2,785	797	0	84	250	1,131
Westmont College	1,266	0	0	127	0	127
Whittier College	966	291	0	97	250	638
Total	55,253	3,003	1,341	6,123	3,740	14,207

Source: Association of Independent California Colleges and Universities.

nearly 9,900 more California resident students in 1995 than they presently do.

The State University-comparable independent institutions are also in the process of reviewing their potential expansion plans beyond 1995. They estimate that if the maximum Cal Grant award increases to the level called for by the existing adjustment policy and if other favorable market conditions exist, they would be willing to expand their physical capacity to accommodate an additional 4,750 students, thus bringing the total potential additional capacity -- additional supply -- to nearly 14,600 students by 2005.

Combined, these 41 institutions have the capacity -- additional supply -- to service nearly 29,000 more California resident students in 2005 than they currently do. Utilizing the available capacity of the independents could reduce the need to immediately expand public postsecondary facilities. The question that remains unanswered and is addressed in the following section is whether it is cost effective for the State to encourage students through finan-

DISPLAY 5 Potential Capacity Available at Independent Institutions with Admission Standards Comparable to the California State University

	Fall 1988 Enrollment	Current Unused Capacity	Expansion Planned by 1995	Potential Capacity Available due to Change in Student Body Composition	Estimated Expansion Between 1995-2005 if Favorable Market Conditions Exist	Total
Azusa Pacific University	1,444	0	500	289	250	1,039
Biola University	1,716	329	200	34	200	763
California Baptist College	538	129	150	65	100	444
California Lutheran	1,246	0	200	87	325	612
Chapman College	2,731	160	500	137	300	1,097
Christ College Irvine	510	50	200	26	200	476
Christian Heritage College	356	0	250	0	250	500
College of Notre Dame	377	183	90	26	150	449
Dominican College	313	103	120	22	150	395
Fresno Pacific College	442	37	75	18	275	405
Loma Linda University	1,968	661	420	472	350	1,903
The Master's College	781	0	300	180	200	680
Mount St. Mary's College	877	60	70	114	150	394
Pacific Union College	1,390	557	300	167	200	1,224
Point Loma Nazarene College	1,704	0	300	34	400	734
Southern California College	750	0	300	75	200	575
United States International Univ.	675	171	150	101	350	772
University of La Verne	1,532	76	220	123	400	819
Woodbury University	639	524	190	83	200	997
World College West	111	0	200	14	100	314
Total	21,871	3,040	4,735	2,067	4,750	14,592

Source: Association of Independent California Colleges and Universities.

cial aid policies to attend a private institution rather than a public one.

Cost-effectiveness of using the independent institutions

The recent Master Plan review process reembraced the State's historic goals of access and choice as parallel and complementary priorities for its financial aid programs. The policy underpinnings for the goals of student choice of which institution to attend are both qualitative, in that independent institutions offer options of types of institutions not available in the public sector, as well as quantitative, e.g., for reasons of prudent use of State resources. The quantitative arguments have historically been that it is potentially less expensive to fund increases in financial aid than to pay for the costs to expand access in the public sector. This section revisits that question.

It would be cost efficient to utilize the University-comparable institutions if the cost to the State were less than that which it would expend to support the student at the University of California. However, the State cannot provide Cal Grant increases only to students attending the University-comparable institutions; those increases go to all Cal Grant re-

DISPLAY 6 *Costs to the State of Increasing the Maximum Cal Grant A Award to the Level Called for by the Adjustment Policy to Redirect 1,500 Students Each Year to Independent Institutions*

Year	Number of Current Recipients Eligibile for Increase in Award	Amount of Award Increase	Total Cost to Provide Increase to Current Recipients	Number of Additional Potential Students	Amount of Grant	Total Cost for Redirected Students	Total Cost of Utilizing Independent Institutions
1	12,233	$1,289	$15,768,079	1,500	$6,539	$9,808,500	$25,576,579
2	12,233	$1,289	$15,768,079	3,000	$6,539	$19,617,000	$35,385,079
3	12,233	$1,289	$15,768,079	4,500	$6,539	$29,425,500	$45,193,579
4	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
5	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
6	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
7	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
8	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
9	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
10	12,233	$1,289	$15,768,079	6,000	$6,539	$39,234,000	$55,002,079
Total 1-10			$157,680,792			$333,489,000	$491,169,792
Total 6-10			$78,840,396			$196,170,000	$275,010,396

Note: All figures are in 1990 dollars.

Source: California Postsecondary Education Commission staff analysis.

cipients in all independent institutions. Thus, the analysis hinges on the costs to increase the Cal Grant maximum award to students at all independent institutions versus the costs of expanding capacity in the University to accommodate 1,500 students a year. Display 6 above and Display 7 on the following page compare the costs of these two alternatives -- increasing the Cal Grant A award to encourage 1,500 students to attend an independent institution rather than the University of California.

Display 6 shows the costs associated with increasing the maximum Cal Grant A to encourage 1,500 students each year to attend an independent institution rather than a public one. Presently some 13,532 students attending California's independent colleges and universities are eligible for a Cal Grant A award. Of those, approximately 90 percent (12,233) are eligible for the maximum award and as such if the maximum Cal Grant A award were increased those students would likely be eligible to receive that increase. The 1990-91 proposed State budget provides a maximum Cal Grant award of $5,250, but the adjustment policy calls for a maximum of approximately $6,539. Thus, to fund the Cal Grant A awards at the level called for by the adjustment policy, each current recipient who receives the maximum award would receive an increase of approximately $1,289. Therefore, to fund the award increase for the current recipients would cost the State approximately $15.7 million. The costs associated with bringing new students to the program who otherwise might opt to attend a public institution is the full amount of the maximum grant -- $6,539. It should be noted that during the first year, 1,500 additional students would receive a maximum Cal Grant to attend an independent institution and that that number grows at 1,500 per

DISPLAY 7 Costs to the State of Supporting 1,500 New Students Each Year at the University of California

Year	Number of Additional Students at the University of California	Cost to Support Each Student	Total Cost of Utilizing the University of California
1	1,500	$18,589	$27,883,500
2	3,000	$18,589	$55,767,000
3	4,500	$18,589	$83,650,500
4	6,000	$18,589	$111,534,000
5	6,450	$18,589	$119,899,050
6	6,450	$18,589	$119,899,050
7	6,450	$18,589	$119,899,050
8	6,450	$18,589	$119,899,050
9	6,450	$18,589	$119,899,050
10	6,450	$18,589	$119,899,050
Total 1-10			$998,229,300
Total 6-10			$599,495,250

Note: All figures are in 1990 dollars.

Source: California Postsecondary Education Commission staff analysis.

year until the fifth year, since students are eligible to receive a Cal Grant award for four years only. Hence the costs to the State of redirecting new students to independents and away from a public institution, begins at $9.8 million in the first year and tops off at $39.2 million in the fourth year. (It should be noted that all figures are in 1990 dollars.) Hence the total cost to the State of utilizing the capacity of the independents (both the cost to increase the award for current grant recipients and the cost associated with the new grant recipients) is approximately $55.0 million per year in the fourth year and beyond.

Display 7 shows the costs to the State if these 1,500 students per year enrolled in the University of California rather than attending an independent institution. The total State cost per full-time-equivalent (FTE) student of $18,589 is derived by adding the $11,592 in support cost per FTE student (see Background Paper 3) plus $6,264 in capital outlay cost per FTE student (see Background Paper 2) plus $733 in financial aid cost per FTE student (it was assumed that some of the students would be eligible for State financial aid and that by taking an average of the financial aid awards coming from State General Funds to these students would result in this amount). Under this scenario, in the first year 1,500 additional students would be enrolled at the University, while by the fourth some 6,000 additional students would be enrolled. The number of students continues to increase in the fifth year but tops out in that year. Since University support is based on the number of units in which a student enrolls and not on headcount, each student enrolling beyond the normal 180-units required for graduation adds a partial FTE to the University's budget and hence increases the costs to the State. The partial FTEs associated with the 1,500 students enrolling in an average of 10 units beyond the 180-unit graduation requirement translates into approximately 450 additional FTE, which have been added to the 6,000 base FTE in the fifth year. It should be noted that while undergraduates at the University take approximately five years on average to graduate with their baccalaureate degrees, that does not mean the University receives five years worth of support for the student since funding is on an FTE basis. Therefore, the timing of the State expenditures shown in Display 7 are not completely accurate and should be distributed over a longer period of time, but the *total* cost to the State to educate the same number of students as in the previous alternative is accurate.

In comparing the cost to the State of the two alternatives, using the capacity of the independents is approximately half as costly as supporting the students at the University. Hence, utilizing the independent institutions can be seen as a cost-effective alternative.

Conclusion

In summary, this analysis indicates that the need for expanding the University of California could be reduced by approximately 6,000 full-time-equivalent students per year in the long-run by increasing the maximum Cal Grant A award to the level called for by the State's existing adjustment policy. Under certain market conditions, the University-comparable independent institutions will have a supply of over 10,000 additional seats by 1995, and if the maximum Cal Grant A award is increased, demand for those seats will equal approximately 6,000 students. It should be noted that not only is the use of financial aid to redirect students to the independent institutions a cost-effective approach for accommodating enrollment demand, it is already called for in existing State policy.

Methodological note

In conducting the regression analysis, Commission staff regressed California resident enrollment in the 41 University- and State University-comparable independent institutions against the percentage that the maximum Cal Grant A award of the previous year covered of total average tuition and fees charged during the previous year. The percentage from the previous year was used because enrollment decisions typically are made prior to knowledge of the actual maximum Cal Grant award for the period in which enrollment will commence. Data for all 41 University- and State University-comparable independent institutions was used for the following calculations since at the time of this publication disaggregated data for the 21 University-comparable independent institutions exclusive of the 20 State University-comparable data was unavailable. During the coming months, Commission staff will disaggregate the University-comparable data from the combined data so that the full effects of an increase in the Cal Grant A award on enrollment in University-comparable independent institutions can be seen. It is expected that the effect of this increase on enrollment in those institutions will be greater than that estimated using all 41, since enrollment in the State University-comparable independent institutions was increasing at the same time the percentage the maximum Cal Grant A covers of average tuition and fees was decreasing. Hence, the estimate in the following analysis likely underestimates the full impact of the increase on the University-comparable independent institutions. Once disaggregated data is available, Commission staff will recompute the regression equation and, using that revised equation, recalculate the impact of a grant increase on those institutions.

The analysis resulted in the following regression equation:

> Resident enrollment in independent institutions = 44,321 + 3572 x (% Cal Grant A covers of average independent tuition and fees).

Assuming 1988 enrollment decisions (the latest period for which resident enrollment data was available) were based on knowledge of the Cal Grant award level of the previous year, this analysis uses 1987-88 Cal Grant A award levels to determine what 1988 California resident enrollment in the independents would have been had the Cal Grant adjustment policy been in place at that time and been fully funded.

The adjustment policy would have provided a maximum Cal Grant A award of $5,533 in 1987-88 -- 59.82 percent of the weighted average 1987 independent tuition and fees of $9,250.

Plugging the 59.82 percent into the regression equation, we obtain 46,458 -- the estimated 1988 California resident enrollment in the independents had the maximum Cal Grant award been determined by the current adjustment policy.

Fall 1988 independent California resident enrollment was 45,121. Therefore this analysis suggests that an additional 1,336 California residents would have enrolled in the independents had the maximum Cal Grant award been at the level prescribed by the current Cal Grant adjustment policy.

In addition, an additional price response coefficient could be added to this equation because parents and students over time become more aware that the State is committed to funding a given portion of the independent tuition and fees. While the actual number that should be added is difficult to predict, staff estimates that as many as 400 additional students per year may be drawn to the independent institutions as a result of the State's continued support in funding Cal Grants at the level called for by the existing adjustment policy.

Hence, anywhere from 1,300 to 1,700 new students each year will be drawn to the independent institutions as a result of a change in the State's support of the maximum Cal Grant A award for students attending independent institutions. Multiplying these figures by four, (the approximate time taken to earn a baccalaureate degree at the independent institutions) means that the independent institutions could enroll between 5,200 and 6,800 more students than they currently do who may have otherwise opted to attend a lower cost publicly supported institution had the Cal Grant not been funded at the level called for by the adjustment policy.

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6 Joint or Shared Use of Facilities in Higher Education in Selected States

Major approaches

States have used two main approaches to joint or shared higher education facilities -- the location of two or more public institutions on one site and an arrangement for use by one institution of the facilities or land (or both) that are owned or under the control of another institution on its own or an adjacent site. This may also entail construction of a special new facility for joint use, as well as, the use of space in an existing facility. In the first case, all institutions are in a sense "tenants" on a common site, and, in the latter, one institution often is the "tenant" on the site or in the facilities "owned" by another.

In addition to sharing a site or facilities, institutions are likely to share certain services that both need -- for example, maintenance, counseling and other student services, library and instructional technology, and computers. In regard to personnel, the institutions may also share some faculty -- either by means of concurrent student enrollment or the use of specialized faculty to teach each other's courses.

Another dimension of shared or joint use facilities is the status of the institutions that are involved; ranging from an autonomous institution with its own governing board to an independently accredited campus of a college or university system, to an off-campus center of a college or university. Branch campuses and off-campus centers may offer either a limited number of credit courses that are applicable to a degree or an upper-division or graduate program that enables students to meet all degree requirements.

Scope of the paper

This paper offers examples of these two major approaches to shared facilities that are drawn from other states, followed by a brief description of California's experience

The higher education center model

Examples are drawn from three states -- Colorado, Illinois, and New York -- of multi-institutional arrangements for using a common site for their instructional and, in some instances, research activities. They differ significantly in regard to the impetus for establishing these centers, the nature of the institutions that are involved, and their mechanisms for funding.

Colorado

The Auraria Higher Education Center in Denver, Colorado, is probably the foremost example of joint facilities that are utilized by three diverse institutions of higher education on a single site -- the University of Colorado in Denver, Metropolitan State College, and the Community College of Denver. The Colorado legislature took steps to establish the Center in 1970 in appropriating planning money for the development of the complex as a means of expanding access to public higher education and related services for residents of the urban metropolitan Denver area. (The main campus of the University is of course in nearby Boulder, the Community College was then a multi-campus institution, and Metropolitan State College was a new institution to meet the special needs of underserved groups in Denver.)

The legislature's intent and expectations were that the Center offer a broad range of programs to a diverse urban population while achieving more effective utilization of facilities than was likely if the institutions operated in separate, uncoordinated facilities. In 1972, the legislature affirmed its intent to move ahead with the development of the Center but with utilization standards that were more "intensive" for classrooms, faculty and administrator offices and library stations than were in effect statewide for other institutions. Furthermore, the legislature specified that *no* provision of space should be planned for (1) courses that were not part of a degree or certificate program and (2) what it regarded as nonessential research activities.

In addition to its original declaration regarding shared facilities, the legislature in 1978 also directed the Center to pursue the consolidation of services in the areas of computers, disabled student services, institutional research, career counseling, and any additional functions related to student services that the Center might propose in the future.

The Center was formalized in statute in 1974, with the provision that its administration should manage the facilities and grounds, allocate space, operate auxiliary and support services, develop long-range plans, and foster cooperation among the participating institutions and their governing boards. Because of uncertainty about future higher education enrollments in Colorado, the legislature in 1975 kept the initial cap of 15,000 FTE on the Center's enrollment for purposes of both construction and operational support, but by Fall 1988, headcount enrollment had reached a total of more than 29,000 -- about 10,000 in the University, 15,600 in the State College, and 3,300 in the Community College -- or slightly more than 18 percent of the total state public institutions' headcount.

The Center is located on a 170-acre site in downtown Denver. Metropolitan State College -- the largest of the three institutions -- offers only undergraduate degrees and certificates while the University of Colorado at Denver offers both undergraduate and graduate work -- the latter enrolling about 30 percent of its students. New transfer students are a slightly larger group than first-time freshmen but continuing and returning students comprise a far larger proportion of the student body at each institution. Each institution makes its own operating budget request through its respective governing board although the Center administration works with the three campuses during the year to determine their need for funding in future budget requests. The Center administration has its own budget that is the responsibility of the Auraria board.

Not surprisingly, there is some duplication of undergraduate programs offered by the two baccalaureate degree-granting institutions -- 13 last year, mostly in the liberal arts and sciences. The main community college in Denver is now at the Center and is a comprehensive institution.

The Center complex continues to function as originally intended, having survived a Colorado Commission on Higher Education staff recommendation in November 1988 that the two baccalaureate institutions be replaced by a single comprehensive university to meet the unique needs of the Denver metropolitan area and that the Community College move its operation to a different site; all of this resulting from a consultant report in September 1988 on the management of the Center.

The only notable change that followed these proposals for change that were made in late 1988 has been in the governance structure of the Center -- a problem since its inception. Membership on the Center's board was changed by reducing the number of appointments by the Governor from four to three and adding the chief executive officers of the three institutions, while retaining a representative from each of the three governing boards -- thus increasing the number of members from seven to nine.

The Center has space for additional facilities but construction is hampered by a requirement that its capital outlay plan encompass all three institutions -- a requirement with which the University has not at this time complied. Its new governance structure may alleviate some problems that characterized the past and, in any case, the Center appears destined to succeed in terms of serving diverse students in Colorado's capital, in spite of negative attitudes and opinions that have been expressed by University administrators and others who wish that the Center -- as conceived by the legislature nearly 20 years ago -- would fail and be replaced by a single institution.

Illinois

The Illinois legislature in 1972 enacted the Higher Education Cooperation Act that appropriates funds annually to the Illinois Board of Higher Education to make grants to groups of postsecondary institutions for the purposes of (1) encouraging interinstitutional cooperation, (2) making efficient use of educational resources, (3) extending access to educational programs and services, and (4) developing innovative concepts. The current appropriation to the Board is $8.545 million -- having increased from $3.910 million for 1985-86 -- and with a still larger amount to be requested for 1990 91

A major outcome of the cooperative program is the establishment of multi-institutional off-campus centers -- often on community college sites -- to make educational opportunity available at the upper-division and graduate levels in centers of population that do not have nearby public university campuses These programs may also (1) include continuing education and research; (2) involve both public and private institutions, together with business, industry, and appropriate federal installations; and (3) extend across state lines -- for example, into Iowa in the quad-cities project.

An example of the nine projects for which the Board made grants in 1987 is the multi-institutional center in the western Chicago suburbs that includes the College of Du Page (a community college), Northern Illinois University, the University of Illinois, and the Illinois Institute of Technology (an independent degree-granting institution). The grant followed the submission of a needs assessment report that reviewed the demographic, economic, and educational characteristics of the area and its need for additional educational resources. Prior to this grant, the Board had authorized several independent institutions to offer certain degree programs off campus on the campus or in the district of the community college.

The first-year grant was used primarily for the purchase of equipment for a computer laboratory. A state budget shortfall slowed progress in developing the Center but second-year funding was used to (1) remodel space at the College for classrooms and the computer lab, (2) begin scheduling classes and provide assistants for the new lab, and (3) continue cooperative planning to stimulate the delivery of off-campus programs and develop support services appropriate to scientific and technological disciplines. The center requested nearly three-quarters of a million dollars in Cooperation Act funds for the current fiscal year to remodel additional space for classrooms on the College campus, construct scientific/technology labs, fund access to library services, and provide basic administrative services. Courses that the baccalaureate degree-granting institutions will begin to offer include engineering technology, computer science, electrical and mechanical engineering, and business.

There are now 14 members of an expanded West Suburban Regional Academic Consortium that completed an extensive needs-assessment study and is now coordinating plans to meet additional needs for advanced training and education that will involve businesses and corporations, as well as residents of the area.

Perhaps best-known of these cooperative projects is the Quad-Cities Graduate Study Center -- a consortium of nine postsecondary institutions that serves and is supported by both Illinois and Iowa. Local institutions are liberal arts and community colleges but three Illinois universities offer off-campus programs in the area as part of the nine-member consortium that was incorporated in 1969.

A needs-assessment study that the National Center for Higher Education Management Systems completed for Western Illinois University in 1986 led to the establishment of the Rock Island Regional Undergraduate Center in 1987 to serve this urban area, with approval to offer three off-campus programs at the baccalaureate level in the fields of business and elementary education. As in an example cited earlier, a revenue shortfall in Illinois slowed the development of the Center's programs in fiscal 1988 but planning for full operations continues with a new budget proposal for 1989.

New York City

The Graduate School and University Center -- under the governing board of the multi-campus City University of New York -- is a rather unique consortial arrangement under which the senior institutions in the system jointly offer graduate degree programs that are centrally administered at the Center in mid-town Manhattan. The Center houses a library that meets the special needs of doctoral students in the humanities, social sciences, and mathematics; a computer center with both a mainframe and a microcomputer laboratory; foreign language instruction to help graduate students meet their language requirements; classrooms; and offices for faculty and administrators. The Center also provides facilities for more than a dozen research institutes in such areas as labor and management policy, and European studies.

The Graduate School faculty is drawn from the various City University campuses, except for a few whose affiliation is solely with the Center. Both master's and doctoral degree programs are offered in Center facilities in fields that do not require specialized equipment and facilities, with coursework in the latter fields offered on campuses with appropriate facilities but administered through the Center.

The major purpose of this consortial arrangement is to assure high quality and avoid duplication of graduate education by pooling resources from all institutions in the City University to support them.

Joint or shared-use facilities

The second type of cooperative use of facilities often involves a "tenant" and "owner" relationship -- that is, one institution leasing or otherwise arranging to use facilities located on another's campus. Examples can be found of locating a community college in the facilities of a comprehensive four-year institution but the much more common approach involves university use of community college sites and facilities to offer upper-division and graduate work leading to degrees.

Use of community college sites and facilities by universities for off-campus programs has two major advantages. The first is the likelihood that community colleges are located within relatively easy reach of most residents of a state and are thus accessible to adults who cannot relocate close to a university because of family or career constraints. The second advantage is the ease with which "2 + 2" articulation can be accomplished when a baccalaureate degree-granting institution offers resident upper-division instruction on a community college campus. Various states that are making plans to expand their higher education systems appear to be using their two-year colleges to provide initial access to baccalaureate-degree programs, at least in part by means of joint-use facilities.

The disadvantages to the "tenant" institution are also evident -- inadequacy of specialized equipment and library resources, difficulty in recruiting or assigning first-rate faculty, and lack of control over the assignment of space and access to shared support services.

Florida

Florida probably has had the clearest history of joint-use facilities for postsecondary education under legislative direction. The statute was first enacted in 1976 and authorized school districts to establish cooperatively joint use educational facilities for instruction with special state funds. The statute was amended in 1977 to include the University of Florida system, the community colleges, and the Florida School for the Deaf and the Blind. It states quite simply that the boards of two or more public institutions shall (1) adopt a joint resolution that indicates their commitment to the utilization of the joint-use facility that they are requesting, and (2) submit it and certain background information to the state's Commissioner of Education. It also specifies that no more than 50 percent of the funds that will be required for the facility shall come from the Public Education Capital Outlay fund that is appropriated for this purpose and is administered by the Commissioner, and that the remaining funds shall be provided by the boards -- state funds in the case of postsecondary institutions that are a part of the University's or the community colleges' own capital outlay programs.

The statute is brief in regard to intent and procedures but both have been elaborated and revised by the Commissioner over time so as to tie joint-use facility planning to capital outlay and other long-range planning generally. Procedures now involve the Florida Postsecondary Education Planning Commission as well as the state office for the community colleges, the University of Florida Board of Regents, and local college trustees.

The general purpose of the statute is to enable the public universities to offer "affiliated and cooperative programs" in various locations so as to take advantage of the strength of established programs while providing expanded access -- in simple terms, to offer upper-division programs leading to a baccalaureate degree on or adjacent to community college campuses at some distance from the universities, in special facilities that are constructed for this purpose. Five of Florida's six regional universities --

established more than two decades ago as upper-division and graduate institutions -- have been the primary participants in this joint-use facilities program. (Little off-campus instruction for credit is offered by the University of Florida, Florida State University, and Florida A & M University - both of the latter located in the state capitol and the University in north central Florida.)

Nine such arrangements for joint use of facilities were described in a Florida Postsecondary Planning Commission report that was published in 1985. These involved five regional universities and seven community colleges on eight campuses. Among them are the Broward Community College campus with a special facility used by both Florida Atlantic and Florida International Universities, and the two campuses of Palm Beach Junior College with arrangements with Florida Atlantic. Sites and facilities may also be shared by two community colleges under this statute and a Florida Commission report in 1986 encouraged the consideration of this option by colleges that were planning new campuses or centers. Community colleges also have joint-use facilities agreements with public school districts under this statute but these are not discussed here.

Three examples of joint-use facilities arrangements are described below.

Broward Community College and Florida Atlantic and Florida International Universities: Recognizing the need for public university programs and services in the Fort Lauderdale area, Florida Atlantic University offered off-campus upper-division and graduate courses on the central campus of Broward Community College and elsewhere with a special state appropriation for this purpose beginning in 1981. The following year funds were appropriated for the construction of a joint-use tower in downtown Fort. Lauderdale on land leased from the Community College for one dollar per year that is also near the county library. The tower facility was part of an agreement that provided for joint use not only by Florida Atlantic and the Community College but also by Florida International University for upper-division and graduate offerings.

The nearly $10 million for construction of the tower came from the University system's capital outlay budget, rather than the special joint-use facilities fund, with the impetus for the project coming from Florida Atlantic University. However, with the exception of the method of funding and the inclusion of the county library in the multi-institutional agreement, the project does not appear to differ fundamentally from the specially funded joint-use facilities projects in Florida. The University's early experience in contracting with the Community College for space and services before construction of the tower was helpful, as these institutions moved into the more complex joint-use facility project and operational problems now appear to have been largely overcome.

In its 1989 session, the Florida legislature authorized and appropriated new funds for the construction of what is to be a branch campus of Florida Atlantic University on the central campus of Broward Community College. Operation of the branch is to begin in portable buildings while permanent facilities are being constructed. Degree programs will be primarily at the upper-division and graduate levels, with the Community College offering most of the lower-division coursework. The University will thus be offering courses on two sites in this Community College district and may seek funding for the construction of a second tower on the downtown site, although Florida International University may cease operations there. However, the two universities are expecting to share still another downtown building that is owned by Florida Atlantic but as a research center, rather than a classroom facility.

Palm Beach Junior College and Florida Atlantic University: Palm Beach Junior College has developed two joint-use facilities agreements with Florida Atlantic University. The more conventional one involves construction of a joint-use facility on the north campus of the College, using proceeds from the sale of land owned by the University that are to be added to the value of the site that the College contributed, and matched by the state's special joint-use facilities fund. This project also evolved out of a long period of cooperation between the two institutions in providing academic services to the county's residents.

The second example is the use of the main campus of Florida Atlantic University in Boca Raton by Palm Beach Junior College as its south campus. The University's offerings were limited until recently to upper-division and graduate work and the College provided college-preparatory and university-parallel courses at the lower-division level, as well as some vocational coursework. In late 1982, the College shifted from total dependence on the University's facilities to leasing land from the University on which it was able to place some portable classrooms and construct some permanent facilities. However, the College students continue to have access to such University facilities as science laboratories, the library, and recreation.

University of Central Florida and Brevard and Daytona Beach Community Colleges: Two joint-use facilities agreements into which the University of Central Florida has entered are designed to extend its upper-division and graduate offerings beyond its main campus in Orlando to residents of the Cocoa and Daytona Beach areas. In both instances, the construction of a special joint-use facility followed a long period of cooperative educational endeavors in which the University engaged with each community college.

Impetus for the Lifelong Learning Center on the Cocoa campus of Brevard Community College came from that institution's seeing the potential for serving the county's residents with needs beyond the associate degree -- needs that the University assessed over a period of years. The University provides the faculty and administration for its programs, and with admissions, registration, and financial aid functions performed through computer linkage to its main campus. The College provides ancillary services. The operation is regarded as a model for other joint-use facilities and is a key part of the University's long-range planning.

The Daytona Beach project was modeled on the Cocoa facility although the University also had a long history of cooperative educational endeavors with this College before they proposed a joint-use facility -- at first at no charge in the College's facilities but also in a building that the University owned on a different site. Funding of the two institutions' joint-use facility on the College campus was contingent on the sale of the University's building in Daytona Beach, the proceeds from which were to be used for partial funding of the new joint-use facility. Justification for the new facility included the College's need for additional space on its campus, as well as the University's need for a permanent facility in that city. The cooperative plan that the institutions developed makes good use of the College's pre-existing service facilities such as its bookstore and cafeteria, as well as maintenance and other services.

Washington State

Washington is well served by its 27 public community colleges but its four-year colleges and universities provide only limited access to upper-division and graduate programs because of the location of their campuses. Access to such programs has been extended by means of cooperative off-campus operations -- an approach that has for the most part been affirmed and expanded in a recent consultants' report to the Washington Higher Education Coordinating Board. These off-campus operations often involve independent colleges and universities as well as Washington's public institutions, and in some cases take place in community college facilities.

What is probably the oldest and largest example of a multi-institutional, off-campus project in Washington is the five-university consortium in the tri-cities area (Paseo, Kennewick, and Richland). Dating back to 1946, it became the Joint Center for Graduate Study in 1958 and expanded in the 1970s to offer undergraduate education in fields other than engineering. This became the Tri-Cities University Center in 1985, with five universities participating in its offerings and may now expand its facilities and programs as a branch campus of Washington State University.

Other examples of current operations include (1) Central Washington University's off-campus programs offered in the facilities of Yakima Valley Community College; (2) the Southwest Washington Joint Center for Education in Vancouver that coordinates the program offerings of Evergreen State College, Washington State University, and Clark and Lower Columbia Community Colleges -- an operation that has been using the facilities of Clark College; and (3) the multi-institutional upper-division and graduate offerings in the Olympia-Tacoma area, using the facilities of Tacoma Community College. (The conversion of several of Washington's off-campus centers to branch campuses of particular state universities was proposed in the consultants' report but legislative action to do so is not yet certain.)

Arizona

One of three state institutions, Northern Arizona University is planning a major off-campus operation on a campus of Arizona Western College -- a 5,500-student, public community college in Yuma. The project will extend opportunities for upper-division and graduate work to residents of the area. This development is viewed as a cost-effective alternative to Arizona State University's new West campus in Phoenix, with no sacrifice in quality of programs and support services.

Summary comments

Florida's community colleges and regional universities have incorporated joint-use facilities into their short- and long-term capital outlay planning since the 1970s, based on the state's strong commitment to using its community colleges as the principal point of access for lower-division students. The state offers an incentive for joint-use facilities by appropriating a special capital outlay fund on a 50/50 matching basis for projects approved by the Commission of Education. At the same time, the legislature severely limits lower-division enrollments in the regional universities. That the joint-use facilities program has been at least moderately successful is demonstrated by the findings that (1) cooperative use of facilities predates special funding for construction of joint-use facilities in many instances, (2) some institutions have continued to use their own system's capital outlay funds to construct such facilities, and (3) the universities have agreed to limit their offerings to upper-division and graduate work at their off-campus centers.

How well the joint-use facilities arrangements work in Florida and elsewhere depends on the goodwill of the administrators who are directly involved since there is a kind of tenant-owner relationship, with the community college almost always the "owner" and provider of a range of important ancillary services. In any case, this alternative to self-contained sites for university branch campuses and off-campus centers that would duplicate community college ancillary services and facilities appears to be a permanent part of the planning by several states for the expansion of access to public higher education, with full-time faculty and full coursework for some degree programs in the larger facilities.

California's past and present experience with shared facilities

The California State University has had at least three kinds of shared-use facilities that began when it was a collection of state colleges under the State Board of Education. These three types are (1) shared campus with what were then junior colleges, (2) off-campus centers on what are now community college campuses, and (3) shared use of facilities with the University of California

Shared campuses

New state colleges were in some instances "housed" on junior college campuses before their own facilities were built on a different campus site in the same metropolitan area. Three examples of this arrangement are California State University, Sacramento -- then Sacramento State College -- first on the campus of Sacramento City College; California State University, Fresno -- then Fresno State College -- first sharing a campus with Fresno City College; and California State University, Los Angeles -- then Los Angeles State College -- located at first on the Los Angeles City College campus.

Off-campus centers

The State University has a long history of offering courses for credit and degree programs on campuses and in facilities of other educational institutions -- often community colleges in locations that are somewhat distant from any State University campus. The Commission does not maintain a current inventory of off-campus centers but a few examples of well-established centers are:

- The Stockton Center: Located on the campus of San Joaquin Delta College, California State University, Stanislaus, leases several classrooms for its off-campus programs and has been doing so for about 17 years.
- The Mission Viejo Satellite Campus: California State University, Fullerton, will begin offering programs in facilities leased from Saddleback College in Fall 1990.
- The Palm Desert Center: California State University, San Bernardino, leases facilities from the College of the Desert on its campus in the Coachella Valley.

- In the only joint-use facility that was constructed by the State for this purpose, the California State University, San Francisco, leases the top floor of the eight-story downtown center of the San Francisco Community College District, where it offers both credit and noncredit courses.

Shared use involving the University

While the University does not generally engage in off-campus center operations, two examples of shared-use facilities with the State University are:

- The Bishop Ranch: The University and the State University both use a facility maintained by the Contra Costa Community College District in the southern part of that county for extension programs.
- The Ventura Center: The University of California, Santa Barbara, and the California State University, Northridge, jointly operated an off-campus center in Ventura for about 15 years before it became solely a State University facility.

Other examples: The University and the State University cooperate in two additional functions that are peripherally related to joint-use facilities. The first is the shared use of special research facilities -- at Moss Landing in northern California and in the Southern California Ocean Studies Consortium. The second example involves the joint doctoral programs in which University doctoral students enroll in the State University for a substantial part of their coursework -- an arrangement that the State University also has made with some independent institutions.

Conclusions

Four conclusions may be drawn from this brief analysis of joint- or shared-use facilities in selected states that are planning to expand to accommodate projected growth in higher education enrollments. Additional conclusions could be drawn but these are the most relevant to planning in California:

1. For residents of underserved areas, expansion of opportunity to work toward a degree from a public university is usually at the upper-division and graduate levels, with states continuing to depend on their two-year institutions to offer the first two years of the baccalaureate degree to many or most of their students.
2. In planning for growth and expansion, states are turning more to joint-use facilities on established campuses than to educational centers that would house two or more new institutions, with the most common model being the establishment of a university off-campus center or branch for upper-division and graduate programs on a community college campus or on an adjacent site. Both models may include joint ancillary services and facilities such as student centers and student personnel services, bookstores and cafeterias, libraries, computer laboratories, and recreational facilities, with some services such as maintenance and janitorial arranged under contract with the host institution in the case of off-campus centers.
3. Most institutional administrators and their governing boards prefer to have full control over the sites and facilities they use to offer credit programs but joint-use facilities agreements are working satisfactorily in the situations described in this report. The bases for this conclusion are that (1) students are being served who might not otherwise be able to avail themselves of educational opportunities that are offered on the home university campus, and (2) the arrangements have continued over a period of years without significant changes being made. A main ingredient of any type of joint- or shared-facilities use that works well is good faith and willingness to cooperate on the part of both the "tenant" and the "owner" institutions (or those that are otherwise sharing sites and facilities).
4. Finally, it appears unlikely that other states that are planning the expansion of their higher education delivery systems will replicate the comprehensive universities that they established in the past because of factors that include uncertainty about the need for more such institutions, given the diversity of the projected population; cost of both building and operating such institutions; and the problem of assuring quality when attempting to replicate the flagship universities. Instead, states are looking at both joint- or shared-use facilities for two or more institutions and the possibility of a new type of urban institution that would meet the special needs of an older, more ethnically diverse popu-

lation that would probably not seek a degree beyond the master's and in a field that relates to their careers.

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CALIFORNIA POSTSECONDARY EDUCATION COMMISSION

THE California Postsecondary Education Commission is a citizen board established in 1974 by the Legislature and Governor to coordinate the efforts of California's colleges and universities and to provide independent, non-partisan policy analysis and recommendations to the Governor and Legislature.

Members of the Commission

The Commission consists of 15 members. Nine represent the general public, with three each appointed for six-year terms by the Governor, the Senate Rules Committee, and the Speaker of the Assembly. The other six represent the major segments of postsecondary education in California.

As of February 1990, the Commissioners representing the general public are:

Mim Andelson, Los Angeles;
C. Thomas Dean, Long Beach;
Henry Der, San Francisco;
Seymour M. Farber, M.D., San Francisco;
Rosalind K. Goddard, Los Angeles;
Helen Z. Hansen, Long Beach;
Lowell J. Paige, El Macero; *Vice Chair;*
Cruz Reynoso, Los Angeles; *Chair;* and
Stephen P. Teale, M.D., Modesto.

Representatives of the segments are:

Meredith J. Khachigian, San Clemente; appointed by the Regents of the University of California;

Theodore J. Saenger, San Francisco; appointed by the Trustees of the California State University;

John F. Parkhurst, Folsom; appointed by the Board of Governors of the California Community Colleges;

Harry Wugalter, Thousand Oaks; appointed by the Council for Private Postsecondary Educational Institutions;

Joseph D. Carrabino, Orange; appointed by the California State Board of Education; and

James B. Jamieson, San Luis Obispo; appointed by the Governor from nominees proposed by California's independent colleges and universities.

Functions of the Commission

The Commission is charged by the Legislature and Governor to "assure the effective utilization of public postsecondary education resources, thereby eliminating waste and unnecessary duplication, and to promote diversity, innovation, and responsiveness to student and societal needs."

To this end, the Commission conducts independent reviews of matters affecting the 2,600 institutions of postsecondary education in California, including community colleges, four-year colleges, universities, and professional and occupational schools.

As an advisory planning and coordinating body, the Commission does not administer or govern any institutions, nor does it approve, authorize, or accredit any of them. Instead, it cooperates with other State agencies and non-governmental groups that perform these functions, while operating as an independent board with its own staff and its own specific duties of evaluation, coordination, and planning,

Operation of the Commission

The Commission holds regular meetings throughout the year at which it debates and takes action on staff studies and takes positions on proposed legislation affecting education beyond the high school in California. By law, its meetings are open to the public. Requests to speak at a meeting may be made by writing the Commission in advance or by submitting a request before the start of the meeting.

The Commission's day-to-day work is carried out by its staff in Sacramento, under the guidance of its executive director, Kenneth B. O'Brien, who is appointed by the Commission.

The Commission publishes and distributes without charge some 30 to 40 reports each year on major issues confronting California postsecondary education. Recent reports are listed on the back cover.

Further information about the Commission, its meetings, its staff, and its publications may be obtained from the Commission offices at 1020 Twelfth Street, Third Floor, Sacramento, CA 98514-3985; telephone (916) 445-7933.

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Recent reports of the Commission include:

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